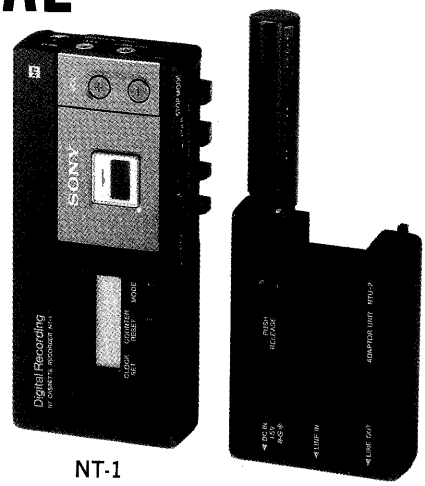
NT-1
NTU-2

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model
Tourist Model



NT-1 NTU-2

SPECIFICATIONS

Format	NT format
Tape	Digital micro tape (NT cassette tape)
Recording system	Helical scan 2 heads, digital recording
Recording head	3 heads
Recording time	90 minutes (supplied NTC-90)
Tape speed	Approx. 6.35 mm/s
Drum rotation	3000 rpm
Error correction	Cross-interleaving code
Track pitch	Approx. 9.8 µm
Sampling frequency	32 kHz
Modulation system	LDM-2
Number of channels	2-channel, stereo
Quantization	12-bit non-linear (equivalent to 17 bits)
Frequency response	10 Hz – 14,500 Hz (+1, –3dB)
Signal-to-noise ratio	More than 80 dB (1 kHz, IHF-A, 20 kHz LPF, LINE IN)
Dynamic range	More than 80 dB (1 kHz, IHF-A, 20 kHz LPF, LINE IN)
Total harmonic distortion	Less than 0.08 %
Wow and flutter	Below measurable limit (less than 0.001% W.PEAK)

NT cassette tape specifications

Size	30 x 21.5 x 5 mm (w × h × d) (1 3/16 × 7/8 × 7/32 inches)
Weight	2.3 g (0.08 oz)
Width	2.5 mm

Model Name Using Similar Mechanism	NEW
Tape Transport Mechanism Type	MN-1-66

Material	Metal evaporated tape
Maximum recording time	120 minutes (double side)

Input

	Jack type	Rated input level	Minimum input level
MIC	stereo minijack	1.38 mV	0.55 mV
LINE IN	stereo minijack	160 mV	64 mV

Output

	Jack type	Rated output level	Miaximum output level	Load impedance
HEAD-PHONES	stereo minijack	–	5 mW + 5 mW	16 ohms
LINE OUT	stereo minijack	160 mV	–	47 kohms

—continue on next page—

使用時は添付資料も参照のこと
Refer to the additional documents

DIGITAL MICRO RECORDER

SONY®

General

Power requirements	DC 1.5 V R6 (size AA) battery or AC power adaptor
Battery life	Approx. 7 hours (consecutive recording) Approx. 6 hours (consecutive playback) (Sony alkaline battery AM3)
Lithium battery life	Approx. 1 year
Power consumption	Approx. 300 mW
Dimensions	112.9 × 23.1 × 55.2 mm (w/h/d) (4½ × 15/16 × 2¼ inches) including projecting parts
Weight	147g (5.2 oz) (including battery)

Supplied accessories

Adaptor unit NTU-2 (1)
Lithium battery CR1220 (1)
Sony alkaline battery AM3 (1, tourist model only)
AC power adaptor (1)
AC-E15L (230V) (AEP model)
AC-NT1 (240V) (UK model)
AC-NT1 (120V) (US, Canadian model)
AC-NT1 (100–240V) (Tourist model)
AC plug adaptor (1, tourist model only)
Connecting cord (pinplug×2 ↔ stereo miniplug, stereo for line inputs and outputs) (2)
Stereo microphone C-3001 (1)
Microphone stand (1)
Microphone attenuator NTU-3 (1)
NT cassette tape NTC-90 (1)
Stereo headphones MDR-E552 (1)
Carrying case (1)

Design and specifications subject to change without notice.

FEATURES

- **Digital stereo tape recorder**
  The non-track format of playback makes this compact size possible. Furthermore, high-fidelity digital sound is available with simple operations.

- **Stamp-size cassette tape**
  The tiny NT cassette tape is capable of up to 120 minutes of playback/recording.

- **Runs on one R6 (size AA) battery**
  One alkaline battery provides power for about 7 hours of continuous recording or about 6 hours of continuous playback.

- **Auto Gain Control (AGC)**
  The digital AGC adjusts the recording level automatically and helps prevent recording mistakes. (The recording level can also be adjusted manually.)

- **Clock with auto calendar function**
  The built-in clock/calendar records the date and time at the beginning of any recording. When you play back a recording, you can see when it was made. The calendar records the date up to the year 2099.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

CAUTION

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.

ADVARSEL !

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri
af samme fabrikat og type.
Lever det brugte batteri tilbage til leverandøren.

ADVARSEL

Lithiumbatteri-Eksplosjonsfare.
Ved utskifting benyttes kun batteri som
anbefalt av apparatfabrikanten.
Brukt batteri returneres apparatleverandøren.

VARNING

Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en likvärdig typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt gällande föreskrifter.

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

SERVICING NOTES

FLEXIBLE CIRCUIT BOARD REPAIRING

- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

NOTES ON CHIP COMPONENT REPLACEMENT

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

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What is the Non-Tracking (NT) Format?

The NT format is the newly developed digital audio tape format which employs stamp-size cassette tapes, and is intended as one of the next generation tape recorders.

The major benefits of this NT format are:
- Pocketable size
- Digital Hi-Fi stereo sound
- Long battery life with one R6 (size AA) battery
- Easy operation

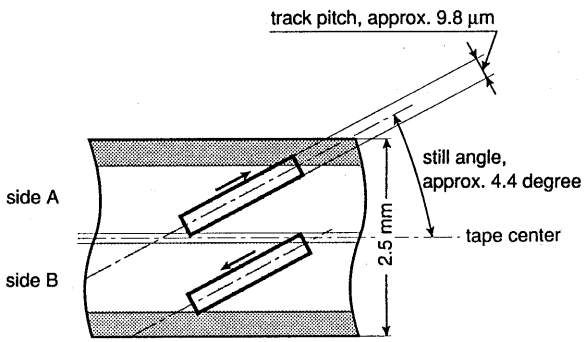
The following is a brief explanation of the NT format:

Pocketable Size

The size of the NT cassette has made possible a tape recorder small enough to keep in your pocket. Storing cassette tapes is no longer a problem either.

Furthermore, you can obtain digital quality recording and playback of up to 2 hours with the soon-to-be sold NTC-120 cassette.

Tape pattern

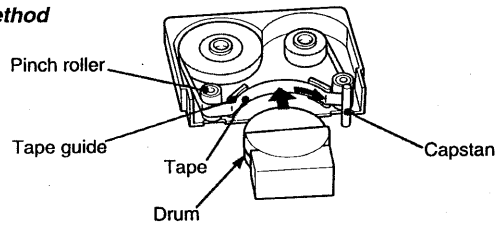


Non-Loading Method

With the conventional helical scan system, it was necessary to have a loading mechanism that drew out the tape from the cassette and wrapped it around the rotary drum. This loading mechanism increased the complexity of the mechanism.

However, with the Non-Loading method, plastic tape guides molded to fit the rotary drum make a loading mechanism unnecessary. Instead, the rotary drum is just pressed against the tape guides and the tape wraps around the drum automatically.

Non-loading method

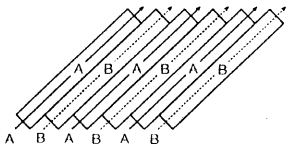


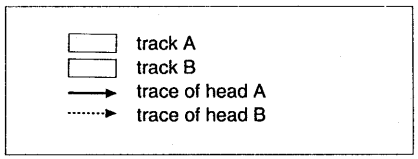
How Can the NT Cassette Tape Be So Small?

With the conventional helical scan system of tape tracking, during playback, the rotary heads must precisely trace each recorded track of the tape. This tracking method requires highly precise mechanical components, which made it difficult to reduce the size of the system. However, with the NT (Non-Tracking) format, the rotary heads are not required to precisely trace the recorded tracks during playback.

How the tape heads function in a conventional system

Traces along the recorded track



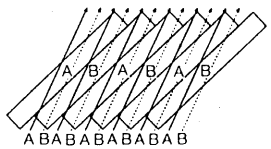


Instead of tracing each track accurately, the rotary heads turn at a higher speed (twice as fast as that for recording) and reads more data. The data picked up may be disconnected or fragmented; however, the IC memory rearranges and augments the data and faithfully reproduces the original sound. Therefore, with this system, the number of mechanical parts could be reduced.

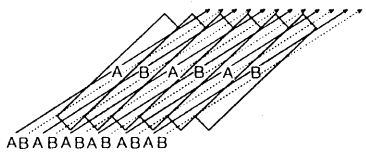
How the tape heads function in the NT format system

Traces at double the density compared to that for recording

a. When the playback head traces at an angle more obtuse than that during recording



b. When the playback head traces at an angle more acute than that during recording



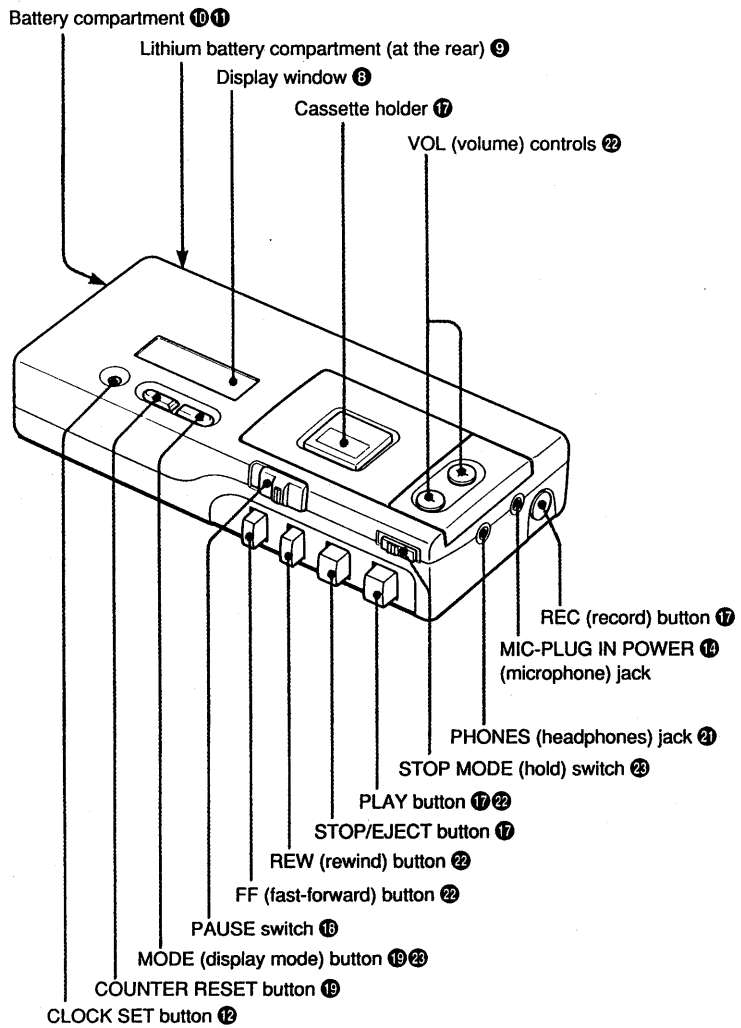
During playback, A → B and B → A intervals need not be the same.

This section is extracted from instruction manual.

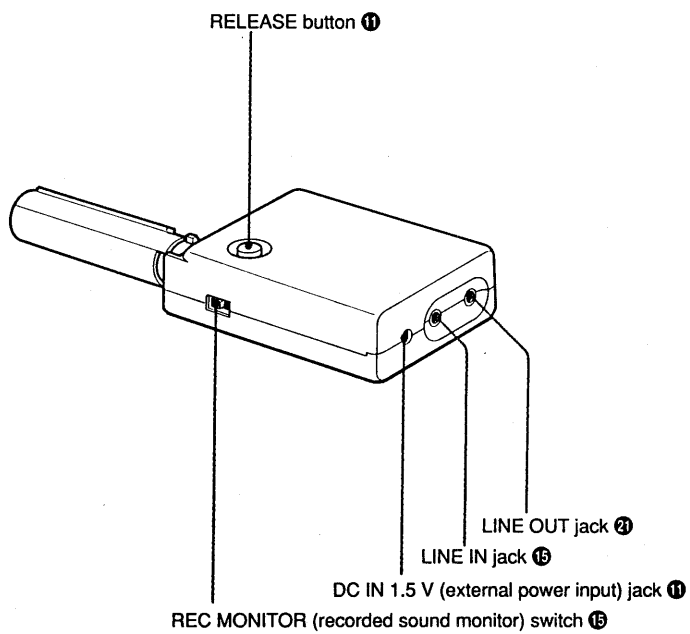
Parts Identification

For further information, see pages indicated in ●.

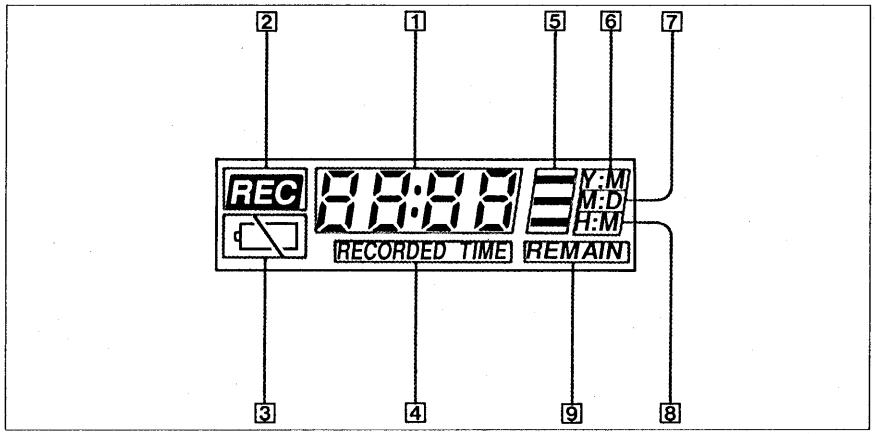
Main Unit



Adaptor Unit


RELEASE button ⑪
LINE OUT jack ㉑
LINE IN jack ⑮
DC IN 1.5 V (external power input) jack ⑪
REC MONITOR (recorded sound monitor) switch ⑮

Display For further information, see pages indicated in ●.



1 **Counter** ⑲㉒㉓
Displays the tape counter, remaining time to the end of the tape, the current time and date, and the time and date the recording was made. Each time the MODE button is pressed, the display mode changes.
Also displays the side now being played or recorded and the volume when the VOL + or - button is pressed.

2 **REC (Recording) indicator** ⑰
Flashes when the REC button is pressed and lights during recording.

3 **(Low battery) indicator** ⑩
Flashes when the battery becomes weak.

4 **RECORDED TIME indicator** ㉓
Lights when the time and date the recording was made is displayed.

5 **Bar indicator** ⑫⑳
Indicates which time/date combination is now displayed: Y:M (Year:Month), M:D (Month:Day), or H:M (Hour:Minute). Also indicates the sound level of recording or playback while the tape counter is displayed.

6 **Y:M (Year:Month) indicator** ⑫⑲㉓
Indicates that the year and month is displayed when the bar lights on the left of this indicator.

7 **M:D (Month:Day) indicator** ⑫⑲㉓
Indicates that the month and day is displayed when the bar lights on the left of this indicator.

8 **H:M (Hour:Minute) indicator** ⑫⑲㉓
Indicates that the month and day is displayed when the bar lights on the left of this indicator.

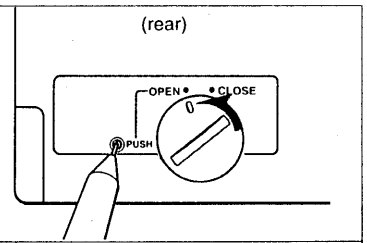
9 **REMAIN indicator** ⑲㉓
Indicates that the remaining time to the end of the tape is now displayed. Flashes when the remaining play or recording time is less than four minutes.

Power Sources

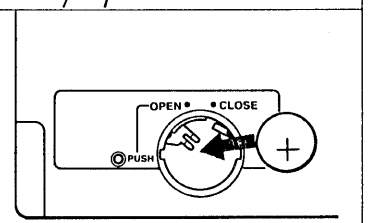
Installing a Lithium Battery

Before using the unit, install the lithium battery to operate the built-in clock/calendar.

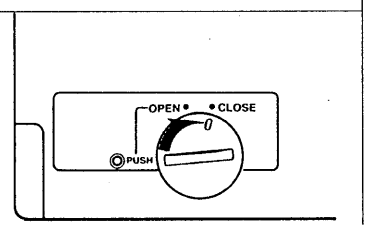
1 Press and hold the button marked "PUSH" at the rear of the unit with a pen tip, and remove the lid by turning it to the OPEN position.



2 Insert a lithium battery with the + side up.



3 Replace the lid and turn it to the CLOSE position.



Lithium battery life
Replace the lithium battery about once a year. When the battery becomes weak, the date and time display may flash, may not keep good time, or may reset itself.
When the battery is not weak, however, there may be an error of about 2 minutes per month.

Cautions on lithium battery
- Keep the lithium battery and the unit out of the reach of children.
- Should the battery be swallowed, immediately consult a doctor.

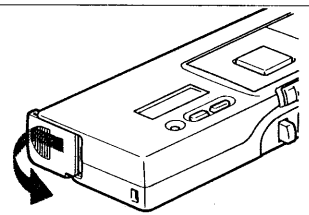
When replacing the lithium battery
Reset the time and date when you replace the lithium battery. If you use the unit without setting the date and time, the time and date will not be recorded with the recording.

If you cannot open the lid
Turn it back fully to the CLOSE position, then press and hold PUSH and turn it to the OPEN position again.

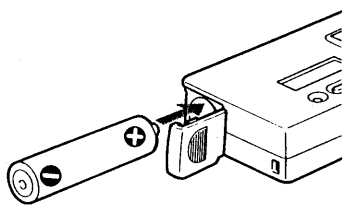
Using the Unit with a Battery

Insert an R6 (size AA) battery.

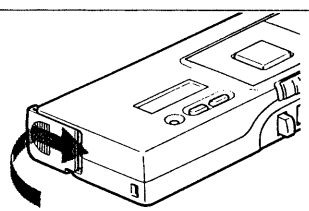
1 Open the battery compartment lid by sliding it in the direction of the OPEN mark.



2 Insert a battery with the + side first.



3 Close the lid and slide it back to the right position.



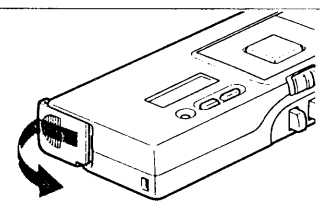
When the battery becomes weak

The ⌧ indication blinks in the display window. Exchange the battery with a new one, or the tape does not run smoothly and noise will be heard.
If the battery becomes too weak to operate the unit, it will automatically stop.

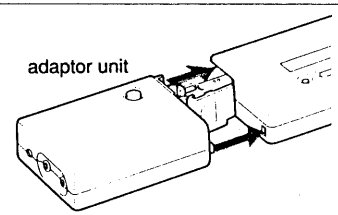
Using the Unit on an External Power Source

Attach the adaptor unit and connect the AC power adaptor.

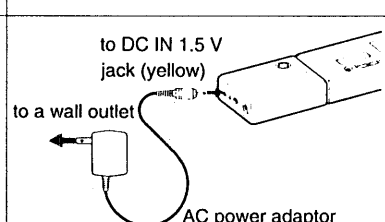
1 Open the battery compartment lid by sliding it in the direction of the OPEN mark.



2 (Remove the battery and) insert the adaptor unit until it clicks.



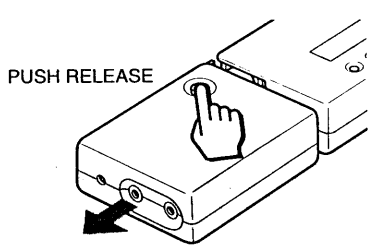
3 Connect the AC power adaptor to the DC IN 1.5 V jack.



For customers provided with an AC plug adaptor
If the plug of the AC power adaptor does not match your outlet, use the supplied adaptor.

To release the adaptor unit

Press and hold the RELEASE button, and pull out the adaptor unit.



Note on the AC power adaptor

Use only the supplied AC power adaptor. Do not use any other AC power adaptor.

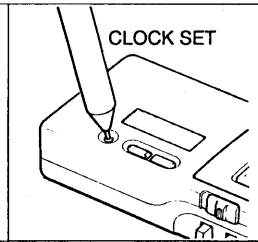
Polarity of the plug

Setting the Date and Time

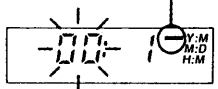
Set the year (Y), month (M), day (D), hour (H), and minute (M) in this order with the unit in the stop mode.

After you have set the clock/calendar, the unit automatically records the date and time whenever you start recording.

1 Press and hold the CLOCK SET button with a pen tip.

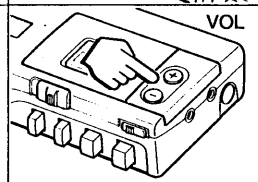


The bar shows what the digits in the display mean. (Year:Month in this case).

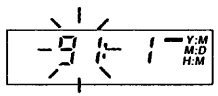


The digits on the left start to flash and indicate that you can set the year.

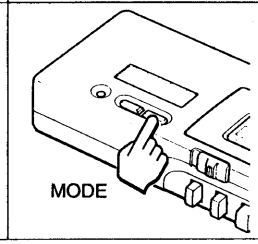
2 Press the VOL + or – button and set the flashing digits to the current year.

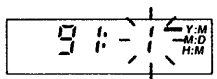


+: The digits increase.
–: The digits decrease.



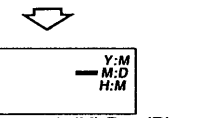
3 Press the MODE button.



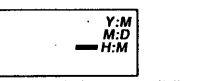


The year has been set. The digits on the right start to flash and indicate that you can set the month.

4 Repeat steps 2 and 3 to set the month, day, hour and minute. As you proceed, the bar moves as illustrated on the right and shows what the digits in the display mean.



Month (M):Day (D)



Hour (H):Minute (M)

When you have registered the minutes, the clock starts operating and the tape counter appears in the display window.

To set the time more precisely

When setting the minutes, press the MODE button as soon as you hear the time signal.

To reset the date and time

Follow the steps below to reset incorrect digits:

1 Press the CLOCK SET button.
2 Keep pressing the MODE button until the digit(s) you want to reset flashes.
3 Press the VOL + or - button to enter the correct digit(s).
4 To reset other digits, repeat steps 2 and 3 before proceeding to step 5. If you have reset all the desired digits, go on to step 5.
5 Press the CLOCK SET button.

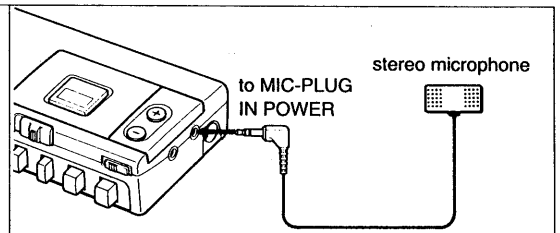
Resetting is completed and the tape counter is displayed.

Recording

For recording, first connect the stereo microphone or another recording source.

Connections for Recording with Microphone

Connect the stereo microphone to the MIC-PLUG IN POWER jack.

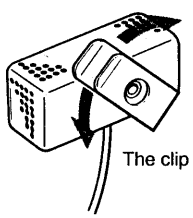


When connected, the power is supplied from the main unit (plug-in-power system).

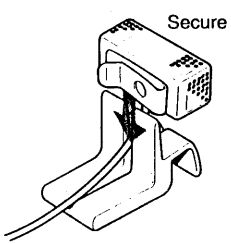
Do not place the stereo microphone too close to the main unit.

How to use the stereo microphone

You can attach the stereo microphone to your clothing (for example, for men, to their tie, for women, to their collar).



The microphone can also be set on the supplied microphone stand.



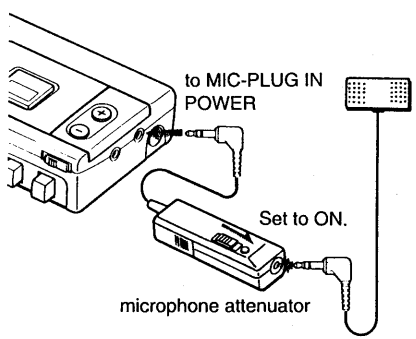
Optional microphones

You can use other commercially available Sony microphones. We suggest these:

- For better sound, stereo panoramic microphone ECM-909
- For interviews, tie-pin type stereo microphone ECM-121

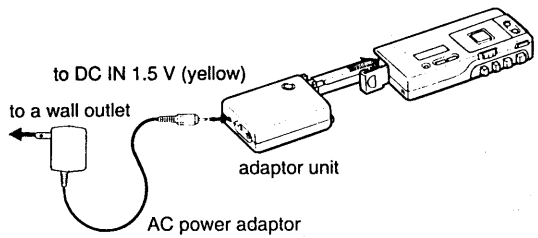
How to use the microphone attenuator

When recording with a microphone, the tape may sound distorted if the original sound source is too loud and/or too close. In such cases, connect the microphone to the microphone attenuator and set its switch to ON.

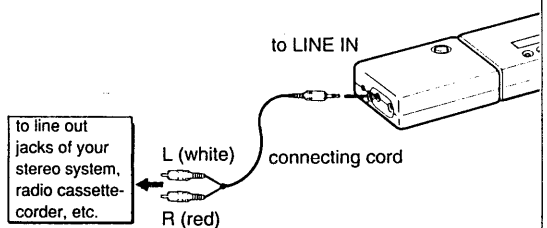


Connections for Recording from Other Equipment

1 Attach the adaptor unit and the AC power adaptor.



2 Connect the connecting cord to the LINE IN jack of this unit and the line out jacks of the additional equipment.



To monitor the sound being recorded

Connect the headphones to the PHONES jack, or connect the LINE OUT jack of this unit to the line in jacks of the monitoring equipment, using the connecting cord (see "Listening to a Tape", page 21).

If howling occurs

Howling noise may be heard while monitoring with a radio cassette-corder or other equipment. Set the REC MONITOR switch to OFF and use the headphones instead.
Normally set the REC MONITOR switch to ON.

For ease of operation with your stereo system

If you use your stereo system often as a recording source and/or monitoring device, we recommend that you leave the adaptor unit connected to your system. Just detach the main unit from the adaptor unit whenever you want to take the unit with you. This will save you the trouble of disconnecting and reconnecting the cords.

To connect to equipment with a stereo minijack-type line out jack

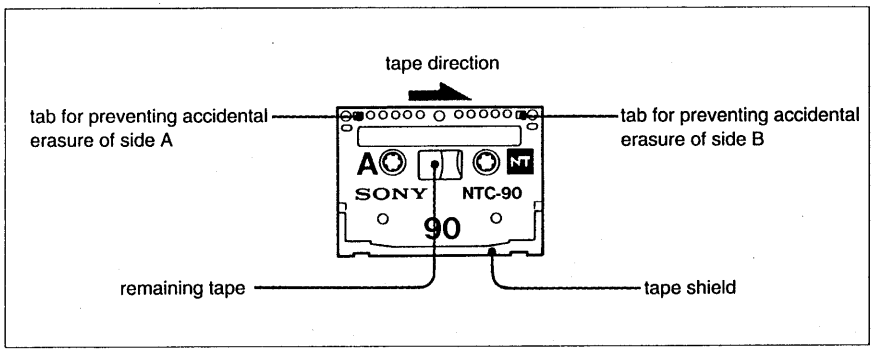
To record from equipment that has a stereo minijack-type line out jack, for example a Discman, you need a commercially available connecting cord (stereo miniplug to stereo miniplug). Connect the optional connecting cord to the line out jack of the additional equipment and the LINE IN jack of the adaptor unit on this recorder.

If you want to mix sound from two audio sources

Connect both the microphone and another piece of equipment (audio source) to the recorder. You can record the audio sound from both the microphone and from the other equipment.

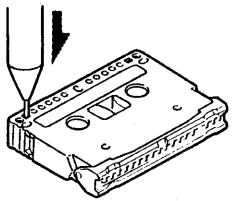
On the NT Cassette Tape

You can record on and play both sides of the NT cassette tape. The supplied NT cassette tape (NTC-90) offers you 90 minutes of recording and playing (45 minutes on each side).



To prevent accidental erasure

To prevent accidental erasure, the NT cassette tape has a red tab in the upper left corner of each side. When the red tab is not pushed in, you can record on that side; when it is pushed in, you cannot record. After recording, push in the tab with a pen tip to prevent accidental erasure. If you try to record with the tab pushed in, the "Err" lights in the display window and the unit stops automatically.
To reuse recording, push the tab out from the opposite side.



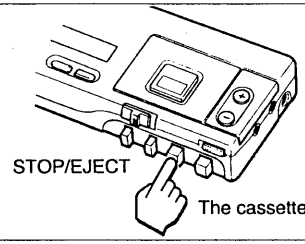
Note

The NT cassette tape has a tape shield to prevent dust from entering the tape. The tape shield opens and closes automatically when inserted and removed; therefore, do not force the tape shield open nor touch the tape inside.

Recording

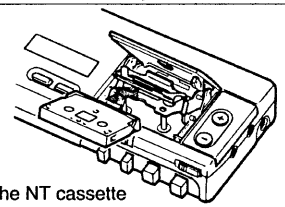
Follow the steps below for standard recording procedures. The recording level adjusts automatically (see "Digital AGC recording", page 18). If you need to adjust the recording level manually, follow the procedure for "Manual Recording" (page 20).

1 Press the STOP/EJECT button.



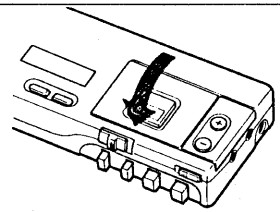
The cassette holder opens.

2 Insert the NT cassette tape with the side you want to record on facing you and with the tape shield facing into the machine.

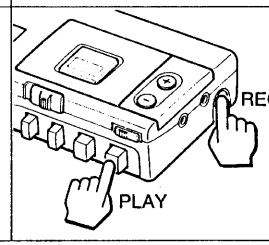


Slide in the NT cassette until it clicks.

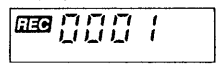
3 Close the cassette holder.



4 Press and hold the REC button, then press the PLAY button.



Display window

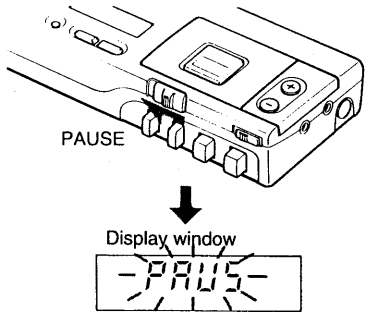


Recording starts. Press the COUNTER RESET button if necessary.

5 If you are recording from other equipment, play your recording source.

To stop recording
Press the STOP/EJECT button. The power will automatically shut off after about 5 seconds.

To suspend recording
Slide the PAUSE switch in the direction of the arrow.



"PAUS" and the tape counter alterate in the display window.

To resume recording, slide the PAUSE switch back to the original position.

To start recording precisely
Set the unit in pause mode and execute steps **4** and **5** on page 17. Start playing your recording source and release the PAUSE switch when you want to start recording.

To start recording midway through the tape
Play the tape to where you want to start recording. Then press and hold the REC button and slide the PAUSE switch to the left (recording pause mode).
Start playing the recording source and slide back the PAUSE switch when you want to start recording.

If you leave the unit in pause mode for more than 5 minutes
The unit automatically switches from pause mode to stop mode to protect the tape and heads from undue wear. (The PAUSE switch remains at the same position even after the unit switches to stop mode.)

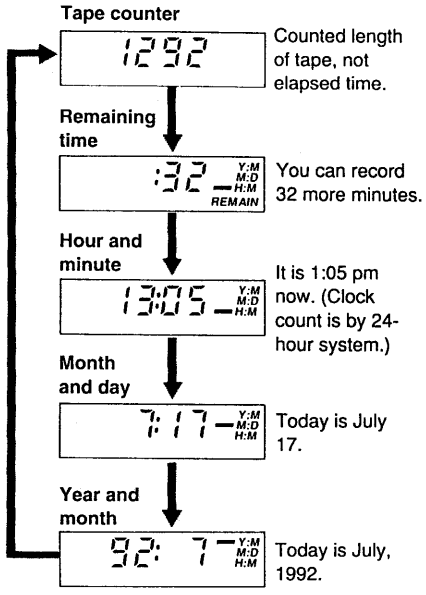
To record on the opposite side
Take out the cassette tape, turn it over and insert it again.

To make sure you have recorded everything
- When you want to stop recording, do not press the STOP/EJECT button right after the recording source has stopped playing, but a few seconds after.
- When you want to continue recording on a tape that has been partially recorded on, so as not to erase the end of the previous recording, slide the PAUSE switch to the left before starting to record again.

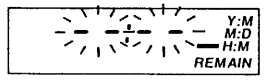
Digital AGC recording
The recording audio level is automatically adjusted by the digital AGC (Auto Gain Control) according to the level of the recording source. With digital AGC, sometimes the sound can be recorded a little unnaturally or with noise depending on the recording source and its changes in level during recording. In such cases, switch to manual recording (see page 20).

Display While Recording

Each time you pess the MODE button, the display changes (see the table below).
The display will change only during recording, fast-forwarding, rewinding or right after the unit has stopped.



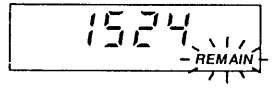
Remaining time display
Playback mode determines how the remaining time is counted; therefore, it takes approximately 10 seconds after recording has started till the remaining time is displayed.
The display in the meantime is as illustrated below:



The displayed remaining time may differ a little from the actual time.

If the COUNTER RESET button is pressed
The display changes to the tape counter indicating "0000" regardless of the display before that.

When the remaining time of the tape is less than 4 minutes
The REMAIN indicator flashes in any mode of the display.



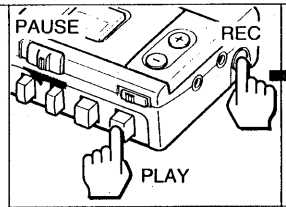
If the date and time display is flashing
If the date and time is not set, the date and time display flashes when the MODE button is pressed. Note that while it is flashing, the recorded date and time is not being recorded. Make sure you insert a lithium battery and set the date and time before recording.

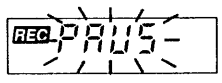
Recording

Manual Recording

We recommend you record using the digital AGC function, but in case you need to more precisely control the recording level, follow the steps below.

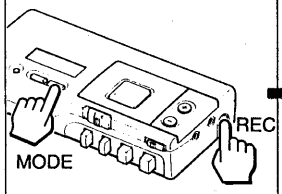
1 Slide the PAUSE switch in the direction of the arrow. Press and hold the REC button and press the PLAY button.

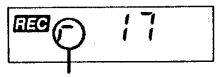




The unit is set to recording pause mode.

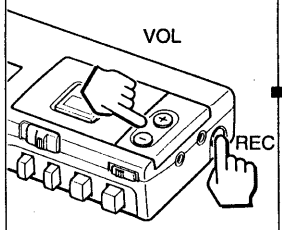
2 Press and hold the REC button and press the MODE button.

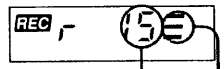




Indicates that the unit is in manual recording mode.

3 Press and hold the REC button and press the VOL + or - button to adjust the recording level.

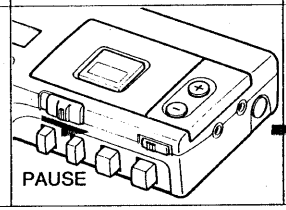




As the digits increment, the recording level increases (minimum:0, maximum:30).

Adjust the recording level so that the top bar lights once in a while.

4 Slide the PAUSE switch back to the original position.



Recording starts.

To switch to AGC recording

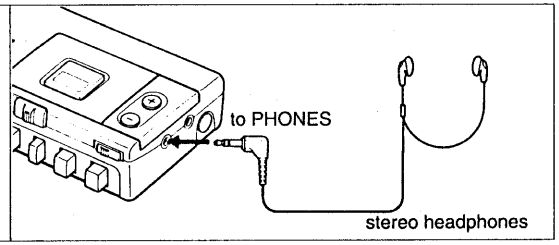
Press and hold the REC button. Then press the MODE button while recording manually. Also after the power shuts off, the unit automatically switches to AGC recording mode.

Listening to a Tape

Connect the headphones or other equipment such as a stereo system.

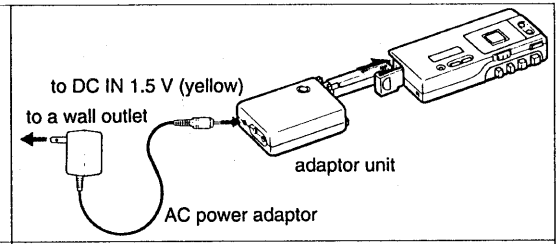
Connections for Listening through Headphones

Connect the headphones to the PHONES jack.

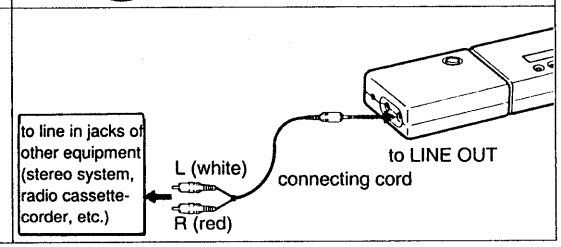


Connections for Listening with Other Equipment

1 Attach the adaptor unit and connect the AC power adaptor.



2 Connect the supplied connecting cord to the LINE OUT jack of this unit and the line in jacks of your equipment.

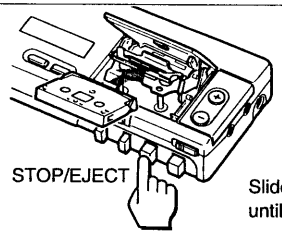


To listen to a tape in the car

Use the optional car battery cord (DCC-E115L) and the car connecting pack (CPA-3). Connect the car battery cord to the cigarette lighter and to the DC IN 1.5 V jack; connect the car connecting pack to the cassette deck of the car stereo and to the LINE OUT jack of the adaptor unit.

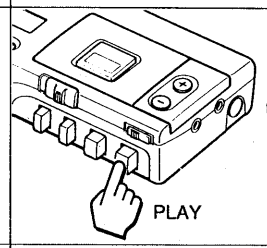
Playing a Tape

1 Open the cassette holder and insert the NT cassette tape with the side you want to listen to facing you and with the tape shield facing into the machine.



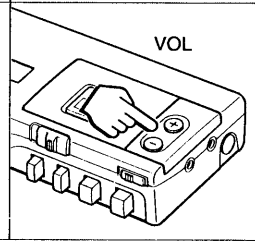
Slide in the NT cassette until it clicks.

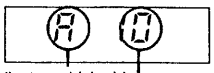
2 Close the cassette holder and press the PLAY button.



Playback starts.
Press COUNTER RESET if necessary.

3 Adjust the volume.
When the headphones are connected, press the VOL + or – button; when other equipment is connected, use the volume control of the connected equipment.





Indicates which side of the tape is now played.

As the digits increment, the volume increases (adjust between 01 and 30).

To stop playback

Press the STOP/EJECT button.
The power will shut off automatically after about 5 seconds.

To suspend playback

Slide the PAUSE switch to the left.
To resume playback, slide the switch to its original position.

To fast-forward and rewind

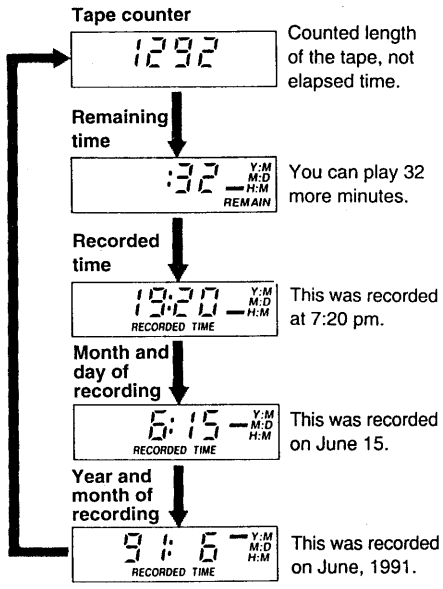
To fast-forward, press the FF button.
To rewind, press the REW button.

At the end of the tape

- When played or recorded to the end of the tape, "End" lights in the display window for a few seconds. The power shuts off and the PLAY button springs back automatically.
- When the tape is fully fast-forwarded or rewound, "End" lights up for a few seconds. The power shuts off automatically but the FF or REW button does not spring back. Press the STOP/EJECT button to restore the FF or REW button before operating the unit any further.

Display While Playing

The time and date when the recording was made can be displayed during playback. The display changes (see the following table) each time the MODE button is pressed (see page 19 for the display during recording, fast-forwarding, rewinding, and right after the unit has stopped):



If the COUNTER RESET button is pressed

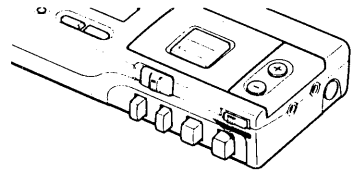
The display changes to the tape counter indicating "0000" regardless of the display before that.

When the remaining time of the tape is less than 4 minutes

The "REMAIN" flashes in any mode of the display.

To prevent undue wear of the battery

When you carry this unit, for example, in a bag or briefcase, slide the STOP MODE switch to the left to set the unit in hold mode. In hold, the unit cannot be operated even if a button accidentally is pressed.



STOP MODE

To release hold mode, slide the STOP MODE switch to its original position.

If the STOP MODE switch is set to HOLD during operation, it does not stop operation. However, once the unit is in the stop mode, the "HOLD" indicator flashes and the hold mode takes effect.

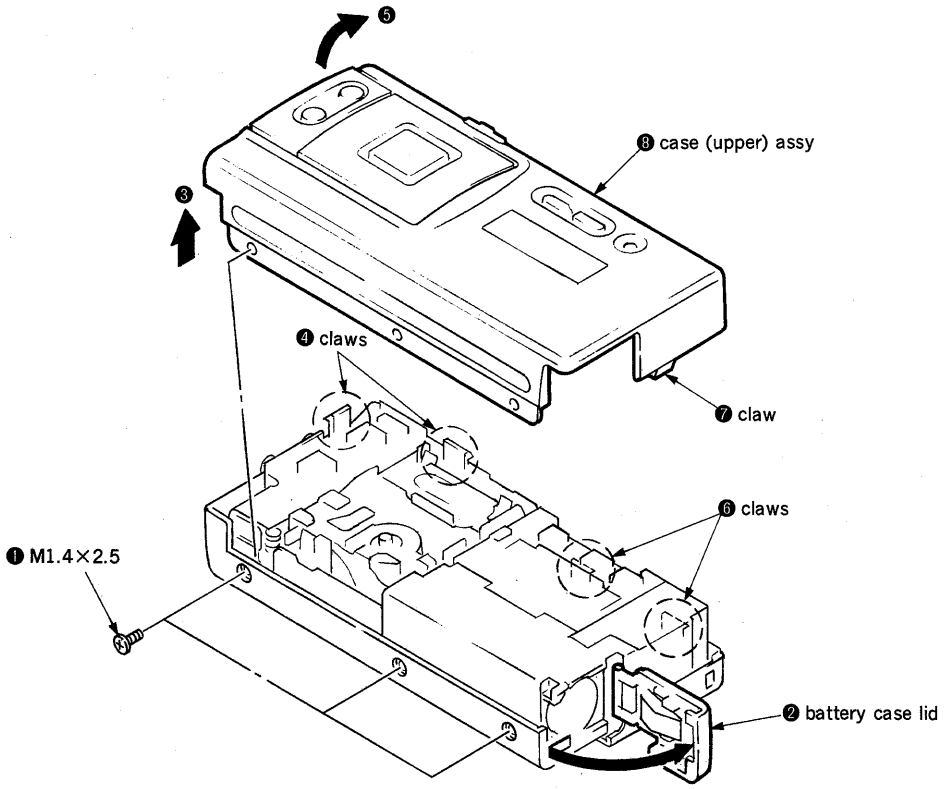
If the buttons are pressed during hold mode

- If the PLAY or REC button is pressed, "HOLD" flashes in the display window and the power shuts off automatically. "HOLD" disappears and the button pressed springs back.
- If the FF or REW button is pressed, "HOLD" flashes in the display window and the power shuts off automatically. "HOLD" disappears after a few seconds but the button pressed does not spring back.
  In this case, press the STOP/EJECT button to make the pressed button spring back before releasing hold mode.

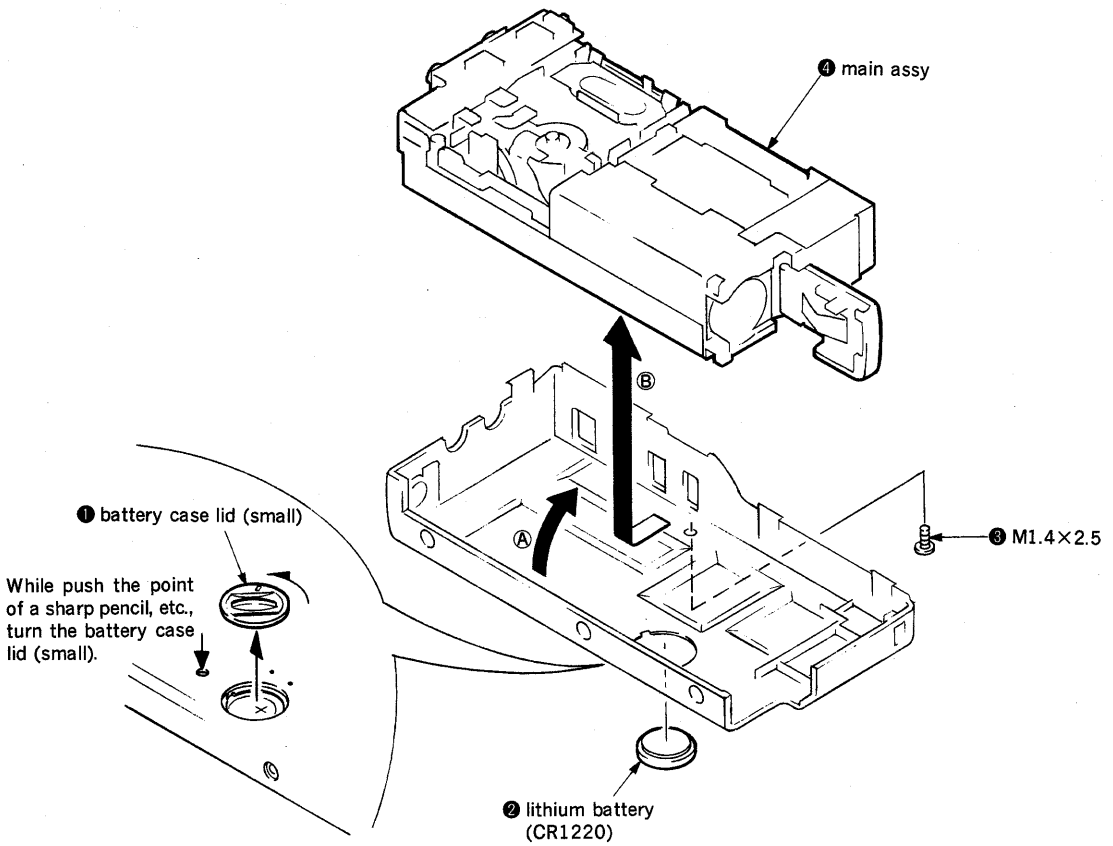
SECTION 2
DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

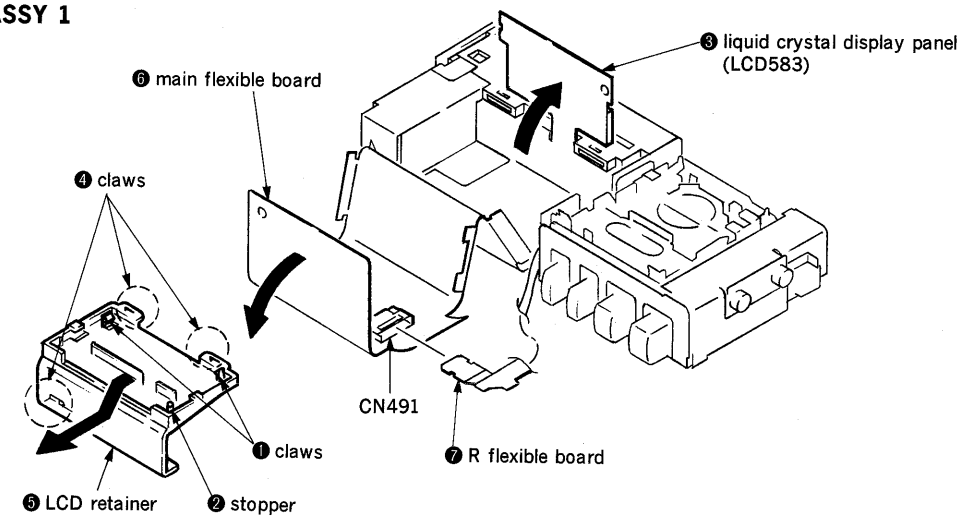
2-1. CASE (UPPER) ASSY



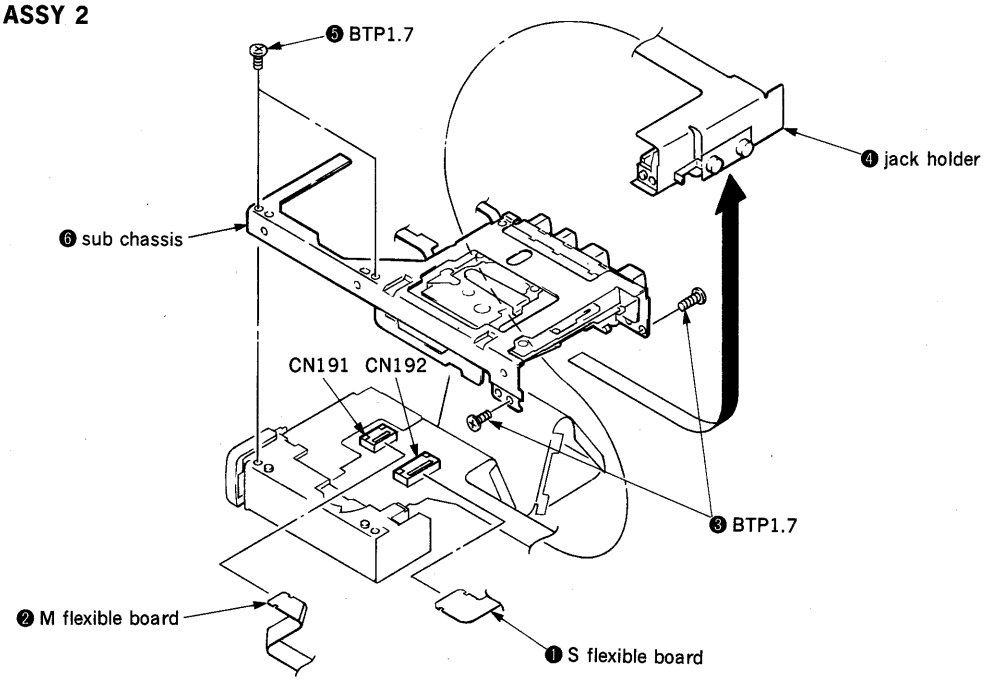
2-2. MAIN ASSY


❹ main assy
Ⓑ
Ⓐ
❶ battery case lid (small)
While push the point of a sharp pencil, etc., turn the battery case lid (small).
❸ M1.4×2.5
❷ lithium battery (CR1220)

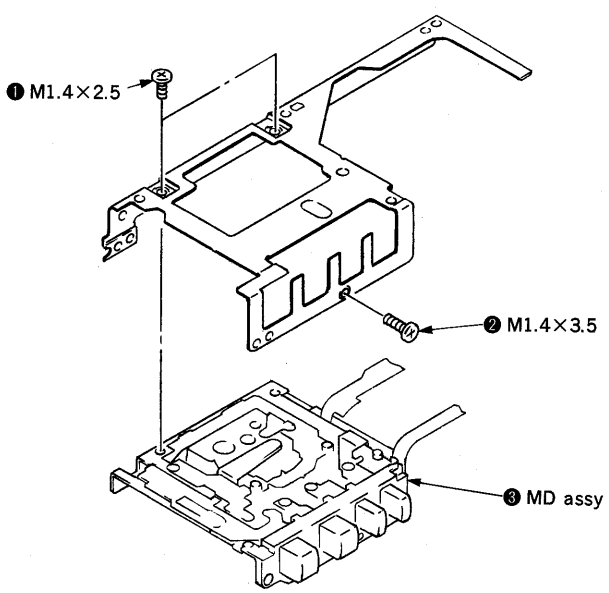
2-3. MD ASSY 1



2-4. MD ASSY 2



2-5. MD ASSY 3



SECTION 3
ASSEMBLY

3-1. HOW TO ASSEMBLY OF MAIN FLEXIBLE BOARD

1. To bend a right angle for an oblique line portions of 2F and 3F.
2. The A portion of 2F and 3F become inside of sheet (Fig. 2) fold up 2F and 3F on the 1F.

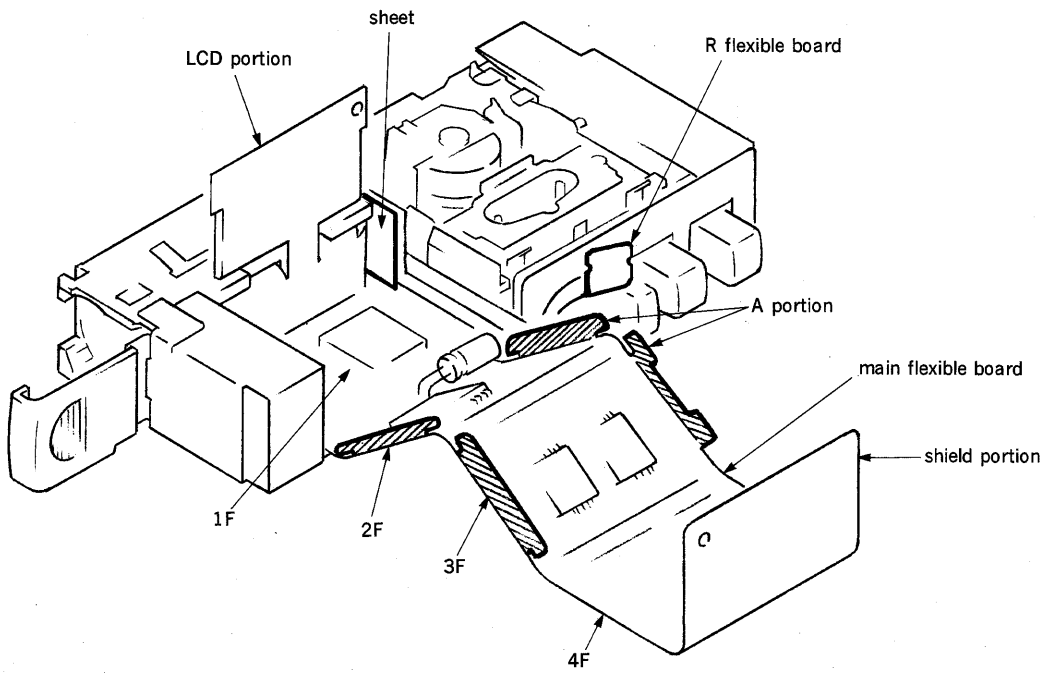


Fig. 1

3. Insert the R flexible board in the CN491 and lock the connector in the direction of arrow.
4. Fold up an oblique line shield portion on the 4F.

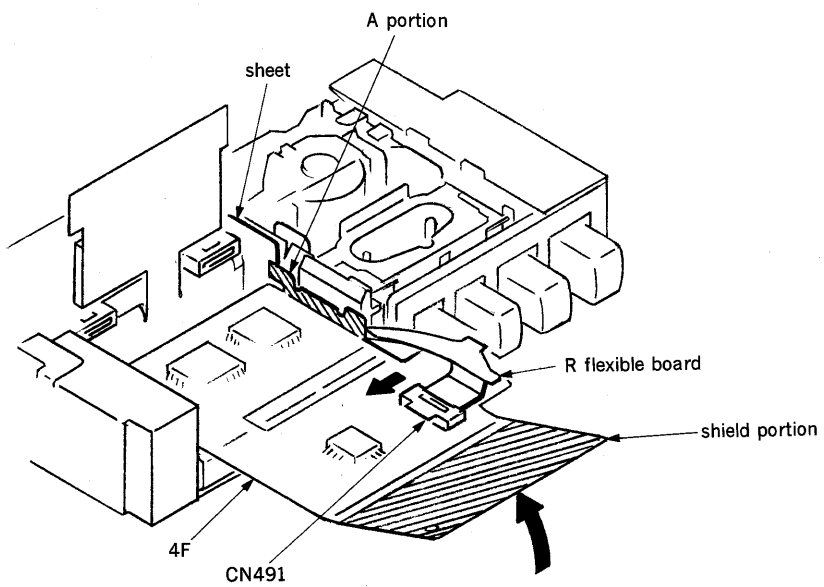


Fig. 2

5. Press the 3F by finger tip and become insert B portion amid mechanism section, an oblique line portion and R flexible board fold up 4F and shield portion on the 3F.

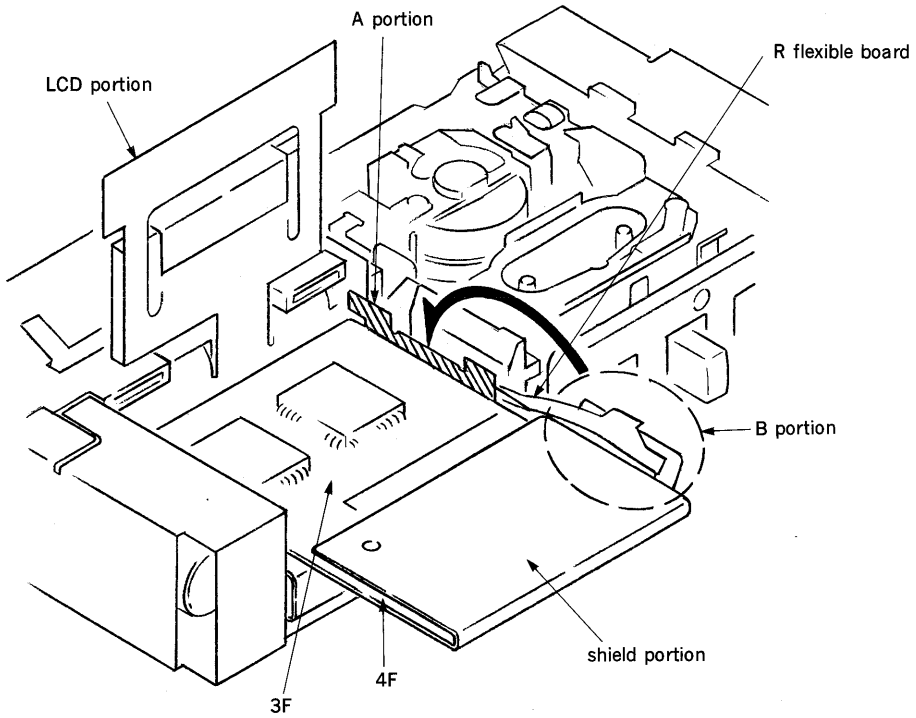


Fig. 3

6. In a parallel move with LCD retainer and lock the 3 claws (* 1).
7. Position sets with stopper to bring down in the direction of arrow and fix the 2 claws (* 2).

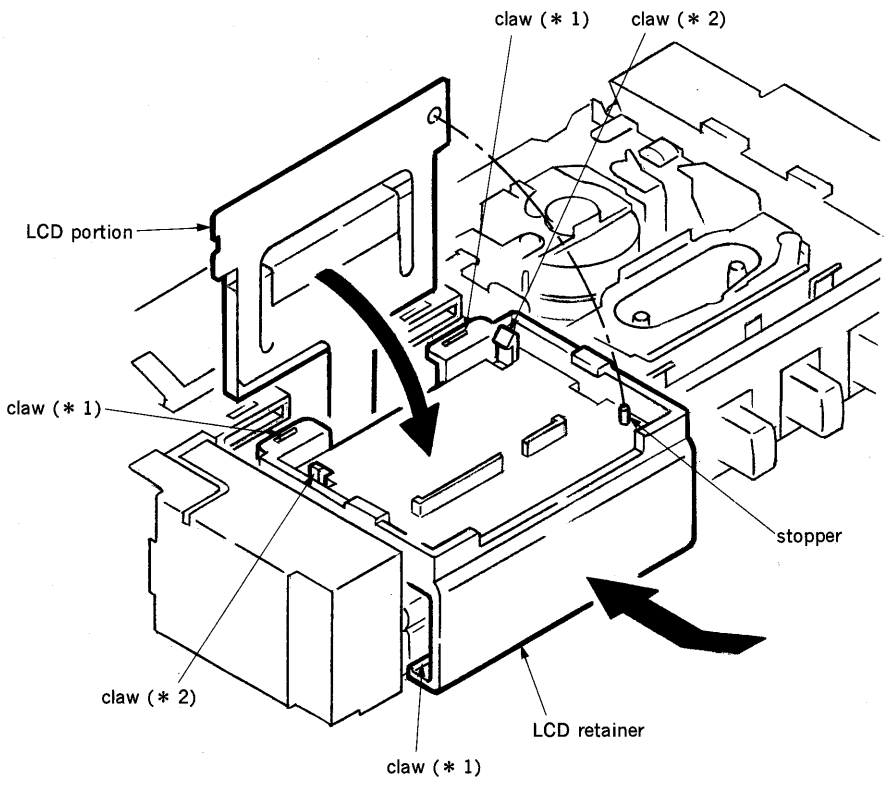


Fig. 4

SECTION 4
DIAGRAMS

4-1. PIN FUNCTIONS

• IC2 LZ841031

Pin No.	Pin Name	I/O	Pin Function
1	TEST	I	Test input, this set is connect with GND.
2	P20	I/O	Port 2
3	P21	I/O	
4	P22	I/O	
5	P23	I/O	
6	P24	I/O	
7	P25	I/O	
8	GND	—	GND
9	P26	I/O	Port 2
10	P27	I/O	
11	PWMOUT	O	PWM output
12	SIO	I/O	Serial data
13	SCK	I/O	Serial clock
14	$\overline{\text{RESET}}$	I	Reset input
15	ϕI	I	Clock input, this set is connect with GND.
16	ϕO	I/O	Clock output
17	EXTSYC	I/O	Timer synchronize signal
18	MC0	I/O	MC signal (input)
19	MC1	I/O	
20	MC2	O	MC signal (output)
21	MC3	O	
22	VDD	—	Power supply
23	SENS1	I	Sense input
24	SENS2	I	
25	OPAMP•IN+	I	Ope amp input
26	OPAMP•IN−	I	
27	OPAMP•OUT	O	Ope amp output
28	V0	I	analog input
29	V1	I	
30	V2	I	
31	V3	I/O	analog input/output
32	P30	O	PTG output
33	P31	O	
34	P32	O	
35	P33	O	
36	P34	O	
37	P35	O	
38	GND	—	GND
39	$\overline{\text{WAKE•HOLD}}$	O	Power wake up signal
40	P10	I	Port 1 input
41	P11	I	
42	P12	I	
43	P13	I	
44	P14	I	
45	P15	I	

Pin No.	Pin Name	I/O	Pin Function
46	P16	I	Port 1
47	P17	I	
48	COM1	I/O	LCD common signal
49	COM2	I/O	
50	COM3	I/O	
51	COM4	I/O	
52	S0	O	LCD segment signal
53	S1	O	
54	S2	O	
55	S3	O	
56	S4	O	
57	S5	O	
58	S6	O	
59	S7	O	
60	S8	O	

• IC5 CXD1330Q

Pin No.	Pin Name	I/O	Pin Function
1	S2	I	SIO DEVICE CODE setting input (S3—S0), this set is connect with VDD-A.
2	S3	I	
3	VDD-A	—	LDM ATTENUATOR power supply (+5V)
4	LDM-ATT	O	LDM ATTENUATOR signal output on REC
5	LDM-COM	O	LDM ATTENUATOR signal RETURN
6	VSS A	—	LDM ATTENUATOR GND
7	VSS	—	Digital GND
8	NC	—	NC, this set is connect with GND.
9	$\overline{512K}$	O	512kHz output
10	LCK	I	LCK input on PB
11	LDM	I/O	LDM signal input on PB
12	VDD	—	Digital power supply (+5V)
13	$\overline{RESET}$	I	Hardware reset input
14	VSS	—	Digital GND
15	OSC-IN	I	Input of X'tal, connect with 12.288MHz X'tal.
16	OSC-OUT	O	Output of X'tal, connect with 12.288MHz X'tal.
17	MCKC-$\overline{OE}$	I	ENABLE signal (output of MSK-C pin), this set connect with GND.
18	MCK-S	I/O	MASTER CLOCK (12.288MHz) input/output of SEP BLOCK
19	MCK-C	I/O	MASTER CLOCK (12.288MHz) input/output of CODEC and D-FIL
20	$\overline{64K}$	O	64kHz output
21	ADA	I/O	Connect pin with AD/DA converter, MSB 1st
22	$\overline{2M}$	O	2MHz output
23	$\overline{32K}$	O	32kHz output
24	DUB	I/O	Input of D-IN, output of D-OUT, LSB 1st
25	D0	I/O	Data input/output
26	D1	I/O	
27	D2	I/O	
28	D3	I/O	
29	$\overline{CAS}$	O	CAS (Column Address Strobe) output
30	$\overline{OE}$	O	OE (Output Enable) output

Pin No.	Pin Name	I/O	Pin Function
31	$\overline{WE}$	O	WE (Write Enable) output
32	$\overline{RAS}$	O	RAS (Raw Address Strobe) output
33	VSS	—	Digital GND
34	A5	O	Address output
35	A4	O	
36	A3	O	
37	A2	O	
38	A1	O	
39	A0	O	
40	A6	O	
41	A7	O	
42	A8	O	
43	VDD	—	Digital power supply (+5V)
44	VSS	—	Digital GND
45	SYNC	I	Synchronize signal input of V
46	$\overline{4M}$	I/O	4MHz input/output
47	$\overline{4M} \cdot \overline{OE}$	I	Output of $\overline{4M}$ pin ENABLE signal input, this set is connect with GND.
48	SCK	I	Clock input of CPU interface
49	SIO	I/O	Data input/output of CPU interface
50	TM	O	TRACE MONITOR output
51	S0	I	SIO DEVICE CODE setting input (S3—S0), this set is connect with GND.
52	S1	I	

• IC6 MB81C4256A-80

Pin No.	Pin Name	I/O	Pin Function
1	$\overline{OE}$	I	Output enable input, this set is connect with GND.
2	$\overline{CAS}$	I	Column address strobe input
3	DQ3	I/O	Data input/output
4	DQ4	I/O	
5	VSS	—	GND
6	DQ1	I/O	Data input/output
7	DQ2	I/O	
8	$\overline{WE}$	I	Write enable signal input
9	$\overline{RAS}$	I	Raw address strobe signal input
10	NC	—	NC
11	A0	I	Address input
12	A1	I	
13	A2	I	
14	A3	I	
15	VDD	—	Power supply (+5V)
16	A4	I	Address input
17	A5	I	
18	A6	I	
19	A7	I	
20	A8	I	

• IC9 CXA1275Q

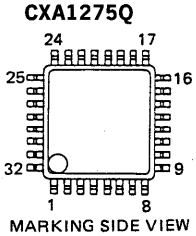
Pin No.	Pin Name	I/O	Pin Function
1	GAIN	—	NC, this set is connect with VCC.
2	REC ON	I	Logic control input to select for REC mode
3	CH1/$\overline{\text{CH2}}$	I	CH select (RF SWITCHING PULSE) input
4	PB ON	I	Logic control input to select for PB mode
5	AF REC	I	Logic control input to select for after recording mode
6	$\overline{\text{CS}}$ OUT	O	CS IN signal to inverted output
7	PB OUT	O	PB system output
8	PB VCC	—	PB system and control logic system power supply except on head amp•output amp
9	HPC	—	Decide lower HPF characteristic of equalizer at condenser connect pin
10	GR•B	—	Decide on equalizer gain at ratio of outside put resistor
11	GR•A	—	
12	Z	—	Decide on higher characteristic of equalizer at resister•condensor connect pin
13	PB GND	—	PB system and control logic system GND except on head amp•output amp
14	REC IN•2	I	CH2 REC AMP input pin
15	REC IN•1	I	CH1 REC AMP input pin
16	REC OUT•2	O	CH2 REC AMP output pin
17	HA IN 2	I	CH2 head amp input
18	PC2	—	Emitter path condenser connect pin of CH2 head amp 1st stage
19	HA VCC	—	Head amp power supply pin
20	HA RA GND	—	Head amp•REC amp common GND
21	SW OUT	O	Switcher output
22	RA VCC	—	Power supply pin of REC amp
23	PC1	—	Emitter path condenser connect pin of CH1 head amp 1st stage
24	HA IN 1	I	CH1 head amp input
25	REC OUT•1	O	CH1 REC AMP output
26	REF	—	Equalizer•output amp reference voltage
27	REC IN•1	I	CH1 REC AMP input 1
28	OA•GND	—	Output amp GND
29	REC IN•2	I	CH2 REC AMP input 2
30	OA•VCC	—	Output amp power supply
31	HPR	—	Decide on lower HPF characteristic of equalizer at resistor connect pin
32	CS IN	I	Chip select input (normally "High")

• IC10 S-3520CF

Pin No.	Pin Name	I/O	Pin Function
1	XIN	I	Oscillation circuit input
2	NC	—	NC
3	$\overline{\text{XOUT}}$	O	Oscillation circuit output
4	$\overline{\text{SCK}}$	I	Synchronize signal input of serial I/O
5	SIN	I	Serial address/data input
6	$\overline{\text{WR}}$	I	Write select pin "Low" : write, "High" : read
7	VSS	—	GND
8	$\overline{\text{TPOUT}}$	O	Reference signal output
9	SOUT	O	Serial address/data output
10	PDW	I	Confirmation signal of system power wake up
11	$\overline{\text{CS}}$	I	Chip select pin "Low" : select mode, "High" : SOUT is high impedance
12	CT	—	Connect condenser between VDD and CT
13	NC	—	NC
14	VDD	—	Power supply (+5V)

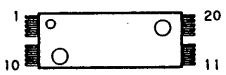
4-2. SEMICONDUCTOR LEAD LAYOUTS —MAIN SECTION (NT-1)—

CXA1275Q

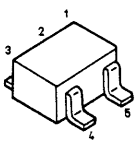


MARKING SIDE VIEW

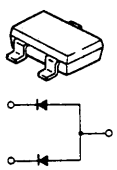
MB81C4256A-80



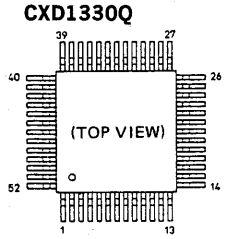
SC7S04F
TC4S66F



DAP202U



CXD1330Q



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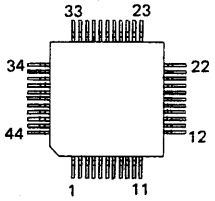

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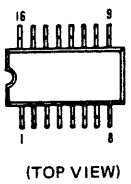
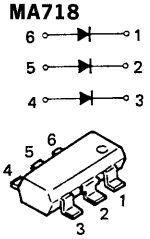
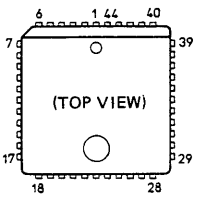


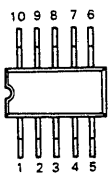
MA718



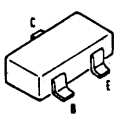
HD49305
HD49308



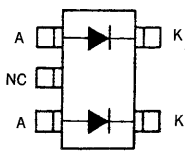
M6M80021FP



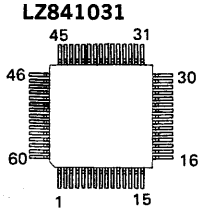
DTA143TU
DTA144EU
DTC144TU
2SC3929



RB471E

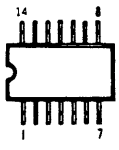


LZ841031



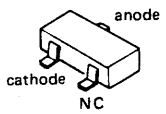
MARKING SIDE VIEW

S-3520CF

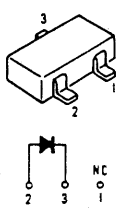


(TOP VIEW)

DAN202U



RD3.9M-B2
SB007-03CP



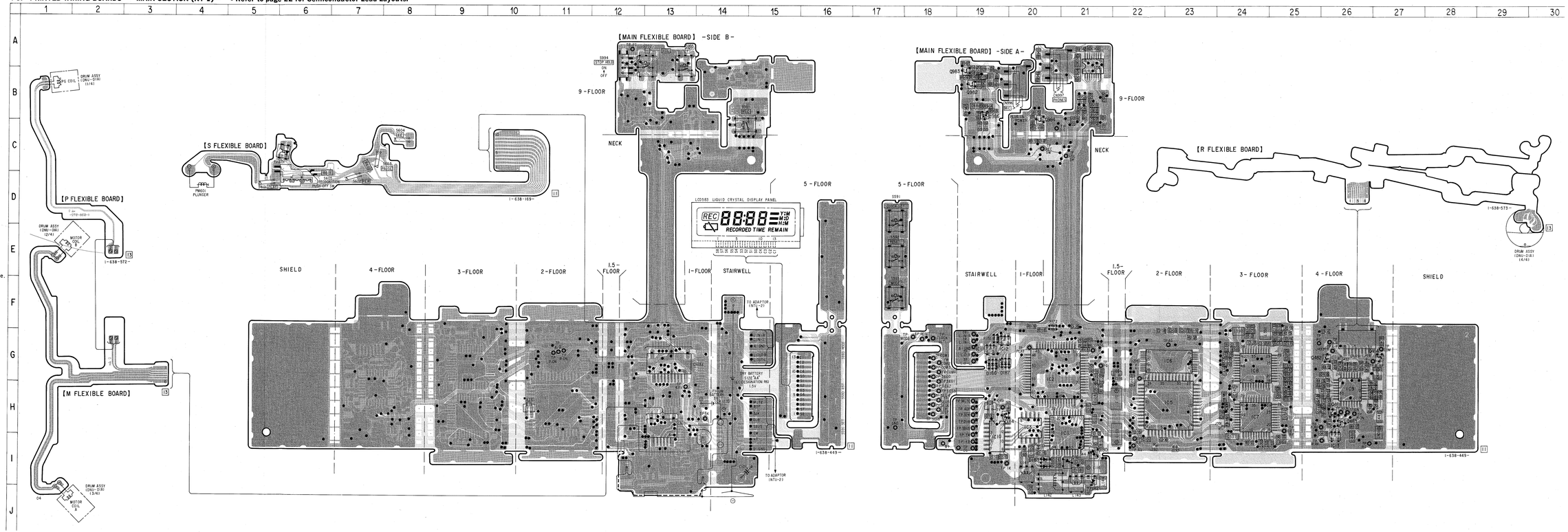
NT-1 NTU-2 NT-1 NTU-2

● Semiconductor Location

Ref. No.	Location
D180	I-21
D181	I-21
D182	I-21
D183	I-20
D184	H-19
D186	G-19
D187	G-19
D986	B-19
IC1	H-21
IC2	G-20
IC3	H-20
IC4	A-21
IC5	H-23
IC6	G-23
IC7	H-24
IC8	G-24
IC9	H-26
IC10	I-19
IC11	G-19
IC12	G-19
IC13	I-26
Q481	H-26
Q482	G-26
Q483	H-26
Q484	G-27
Q982	B-19
Q983	B-19
Q984	B-20

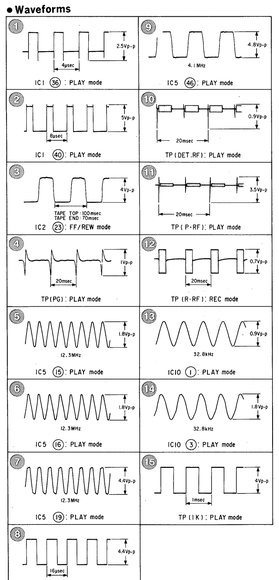
Note:
- ■ : parts mounted on the conductor side.
- ● : Through hole.
- ▒ : Pattern on the side which is seen.
- ▒ : Pattern of the rear side.

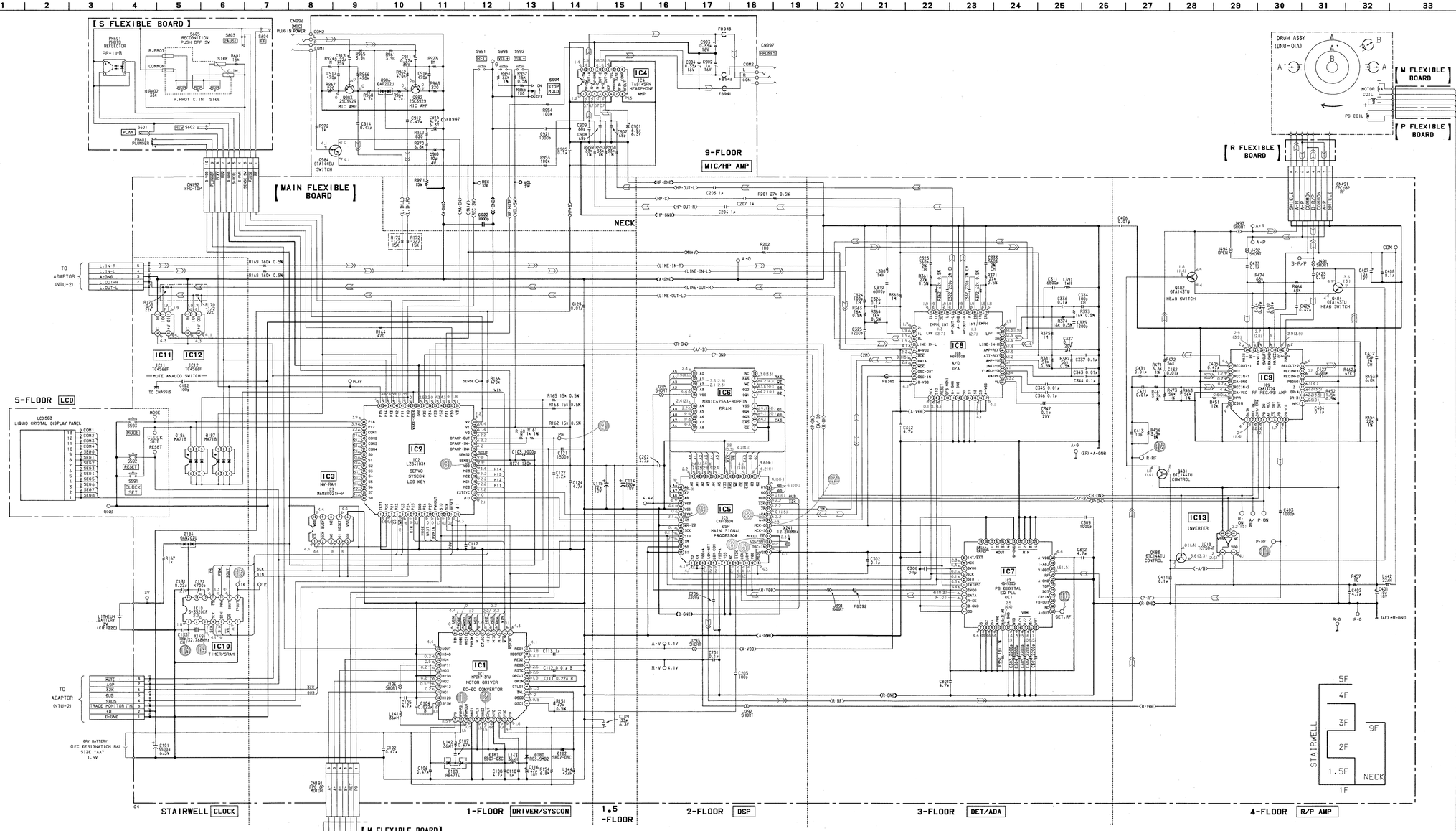
4-3. PRINTED WIRING BOARDS —MAIN SECTION (NT-1)— ● Refer to page 22 for Semiconductor Lead Layouts.



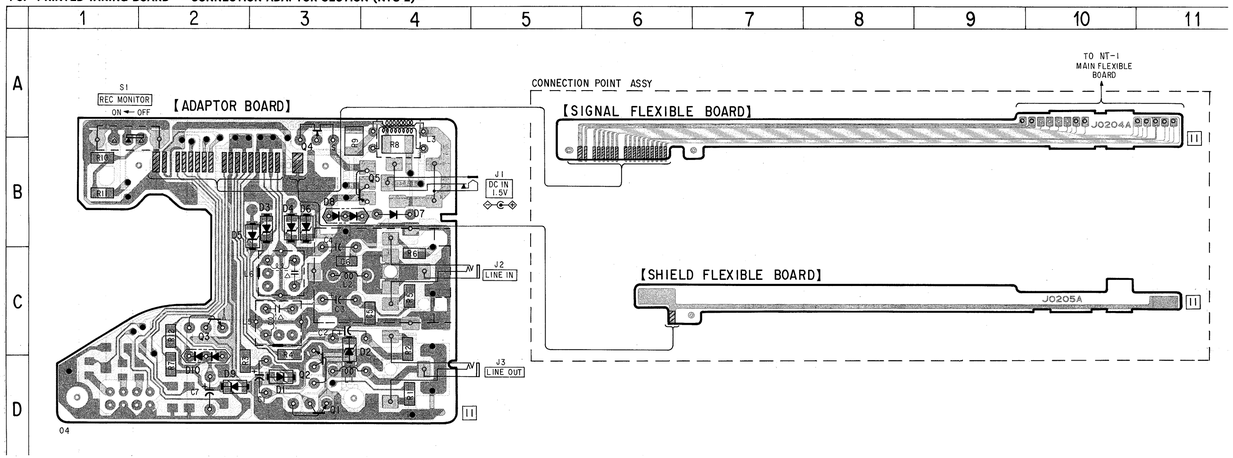
Note:
- All capacitors are in μF unless otherwise noted. pF: μμF
  50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.
- % : indicates tolerance.
- ⏚ : B+ Line
- Power voltage is dc 1.5V and fed with regulated dc power supply from test point (+B) the state of insert the connection adaptor (NTU-2).
- Voltage and waveforms are dc with respect to ground under no-signal conditions.
  no mark : PB (NTC-90)
  ( ) : REC (NTC-90)
- Voltages are taken with a VOM (Input Impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
  ▷ : PB
  ▷▷ : REC

● Waveforms

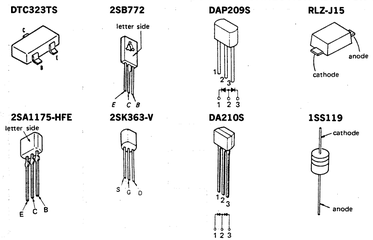




4-5. PRINTED WIRING BOARD —CONNECTION ADAPTOR SECTION (NTU-2)—



4-6. SEMICONDUCTOR LEAD LAYOUTS —CONNECTION ADAPTOR SECTION (NTU-2)—



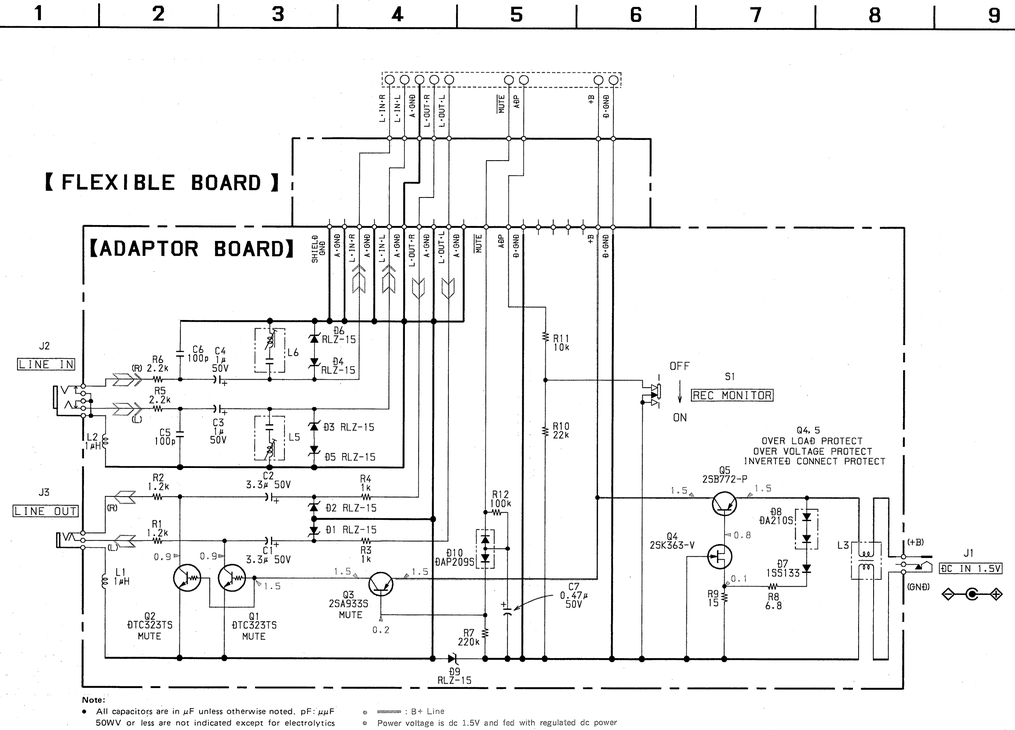
● Semiconductor Location

Ref. No.	Location
D1	D-3
D2	C-3
D3	B-3
D4	B-3
D5	B-3
D6	B-3
D7	B-4
D8	B-3
D9	D-2
D10	D-2
Q1	D-3
Q2	D-3
Q3	C-2
Q4	A-3
Q5	B-4

Note:

- ⊢ indicates side identified with part number.
- ● : Through hole.
- ▨ : Pattern on the side which is seen.
- ▨ : Pattern of the rear side.

4-7. SCHEMATIC DIAGRAM —CONNECTION ADAPTOR SECTION (NTU-2)—



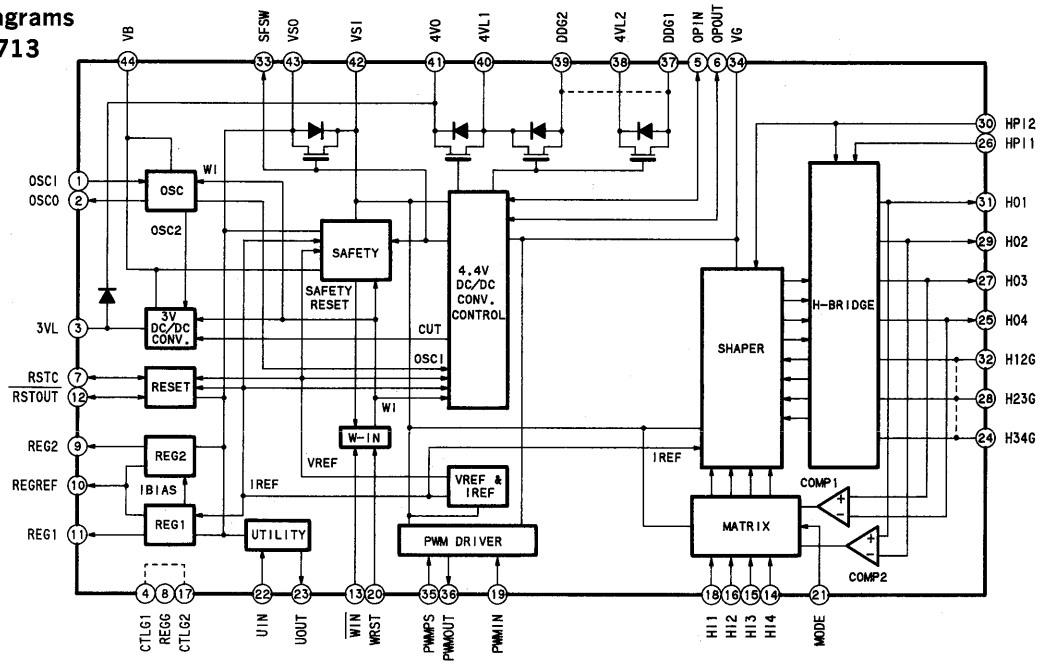
Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and ¼W or less unless otherwise specified.

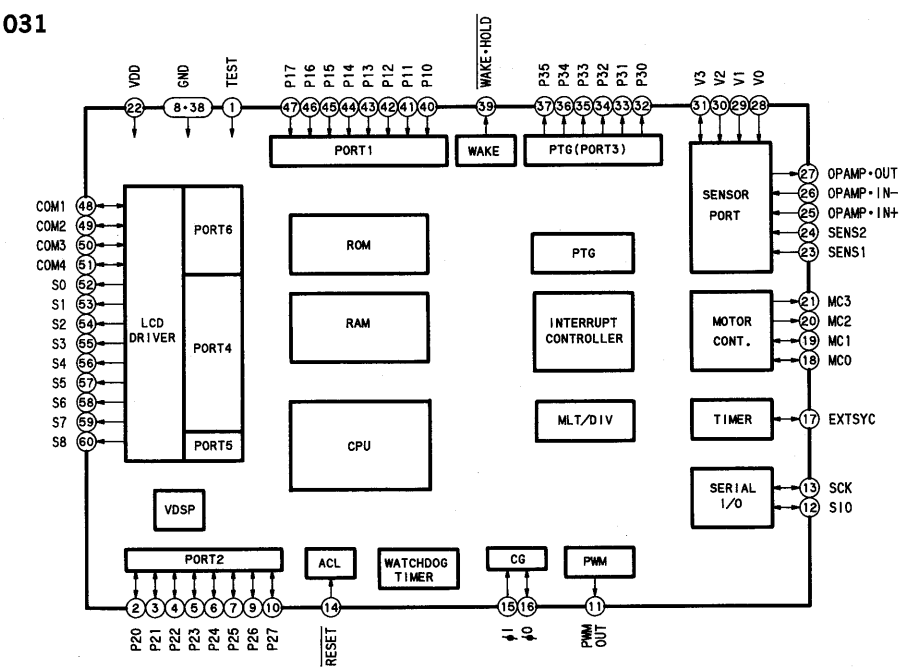
- ═══ : B+ Line
- Power voltage is dc 1.5V and fed with regulated dc power supply from external power voltage jack.
- Voltage is dc with respect to ground under no-signal conditions.
- Voltages are taken with a VOM (Input impedance 10MΩ). Voltage variations may be noted due to normal production tolerances.
- **Signal path.**
  - ⋙ : PB
  - ⋘ : REC

• IC Block Diagrams

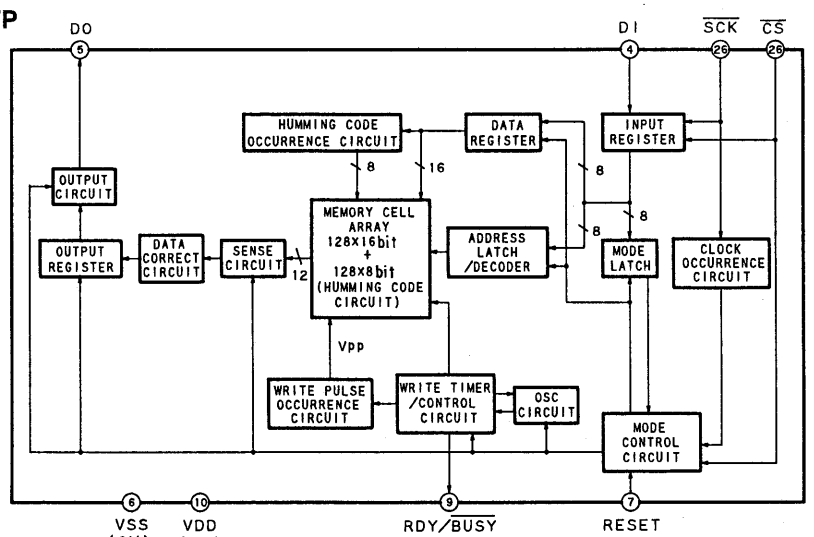
IC1 MPC1713



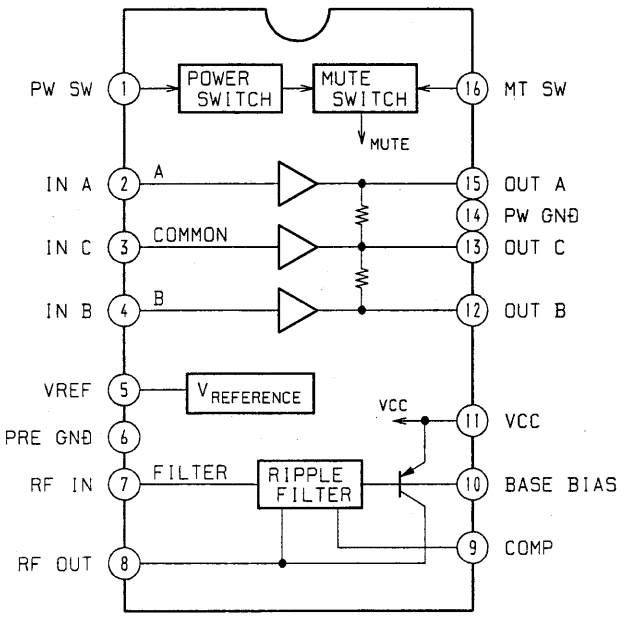
IC2 LZ841031



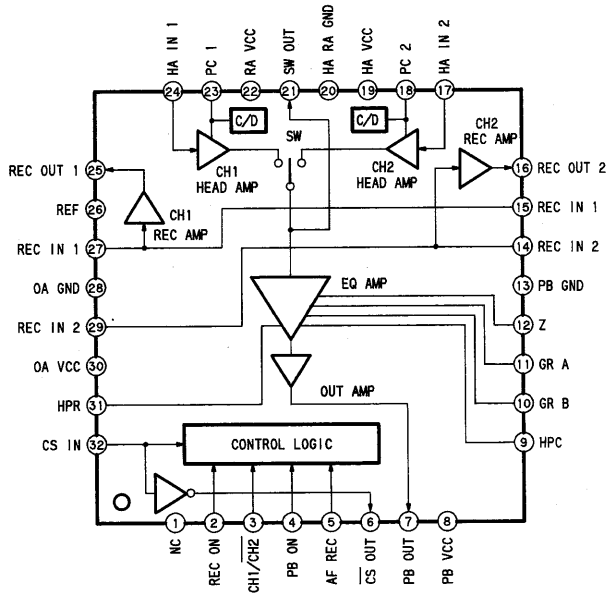
IC3 M6M80021FP



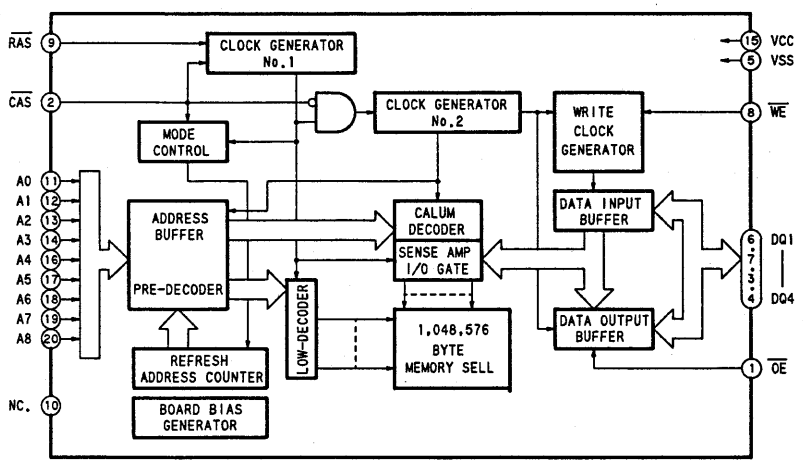
IC4 TA8145FN



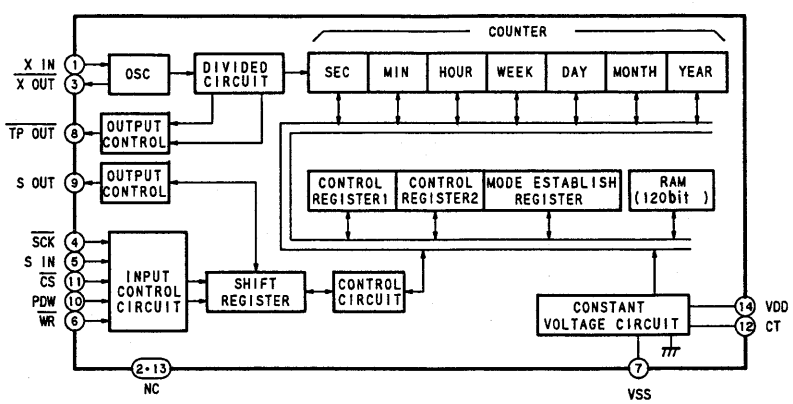
IC9 CXA1275Q



IC6 MB81C4256A-80



IC10 S-3520CF



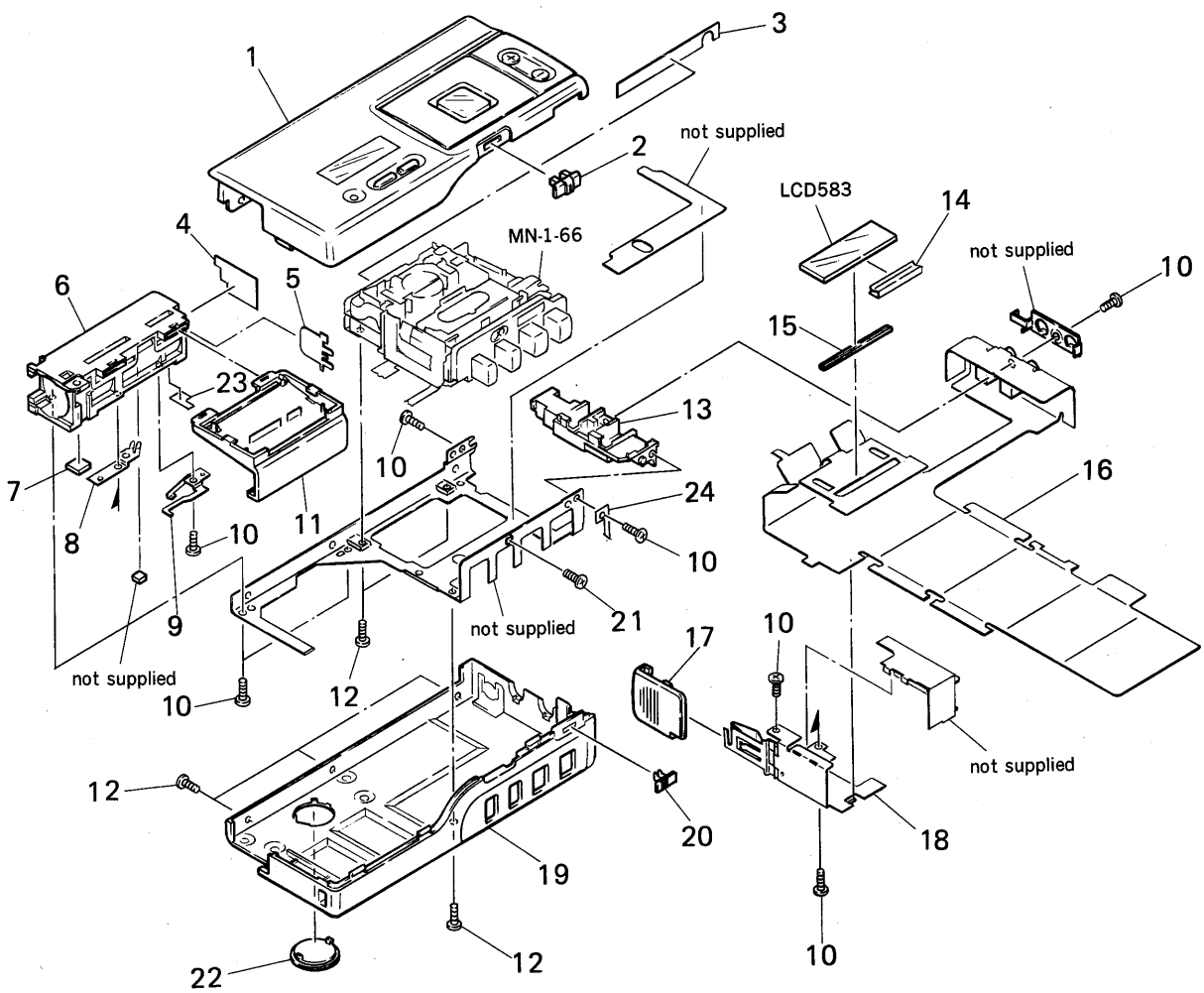
SECTION 5
EXPLODED VIEWS

MAIN SECTION (NT-1)

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE)... (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Hardware (# mark) list is given in the last of this parts list.

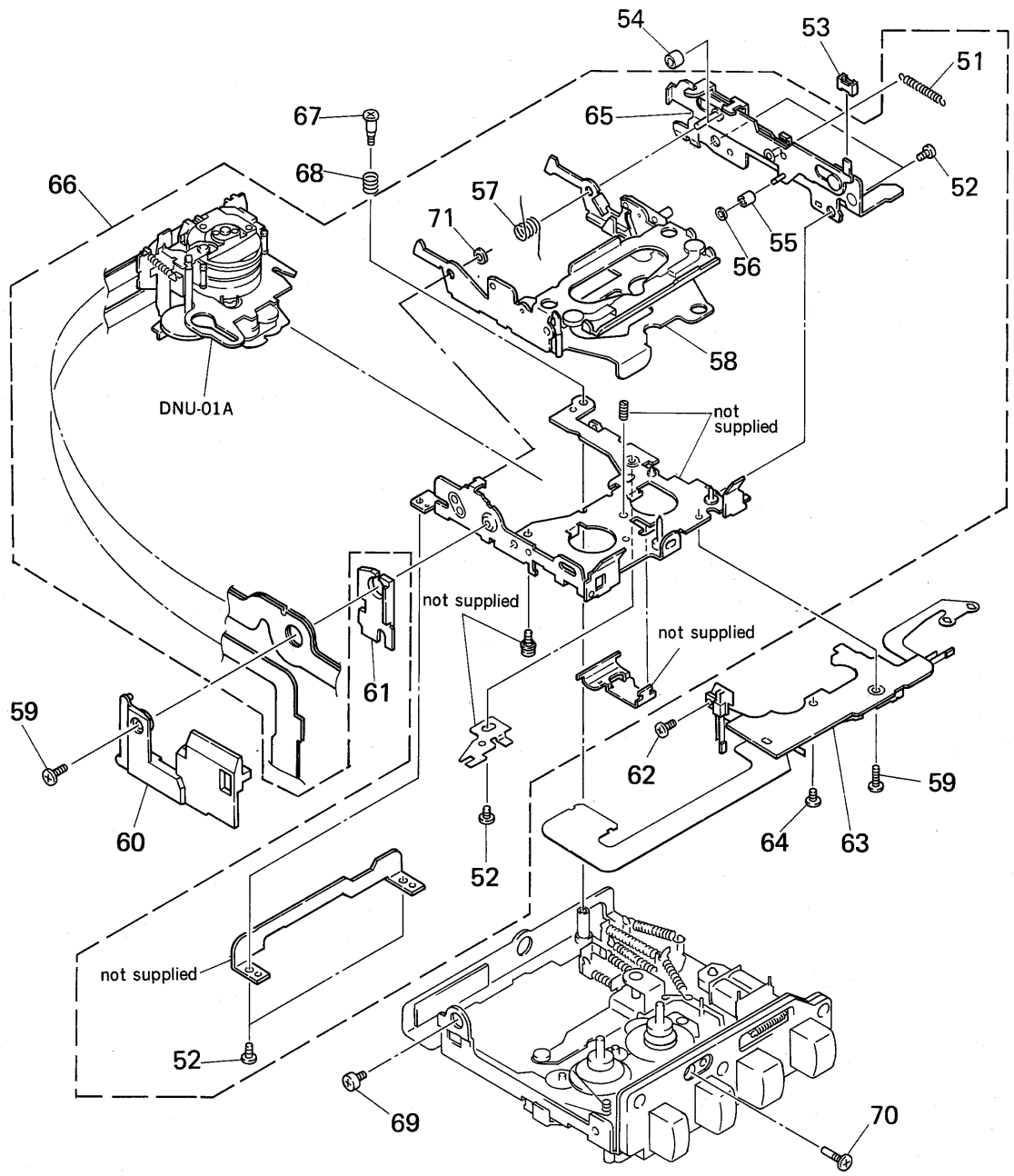
5-1. CABINET SECTION



Ref. No.	Part No.	Description	Remark
1	X-4941-424-1	CASE (UPPER) ASSY	
2	4-943-759-01	KNOB (PAUSE)	
* 3	4-943-773-01	SHEET (A), INSULATING	
* 4	4-948-127-01	SHEET (PLUS)	
5	4-948-125-01	TERMINAL BOARD, PLUS	
6	4-943-756-01	CASE (BATTERY)	
7	9-911-840-XX	CUSHION (CR)	
8	4-943-772-01	TERMINAL BOARD (CR), MINUS	
9	4-943-771-01	TERMINAL BOARD (CR), PLUS	
10	4-887-321-11	SCREW (B1.7)(G), TAPPING	
* 11	4-943-758-01	RETAINER, LCD	
12	3-704-197-22	SCREW (M1.4X2.5), LOCKING	
13	4-943-757-01	HOLDER, JACK	

Ref. No.	Part No.	Description	Remark
* 14	4-947-342-01	CLIP, LCD	
15	1-535-891-11	CONDUCTIVE BOARD, CONNECTION	
16	A-3270-988-A	MAIN FLEXIBLE BOARD, COMPLETE	
17	4-943-755-01	LID, BATTERY CASE	
18	X-4941-428-1	CASE ASSY, SHIELD	
19	X-4941-427-1	CASE (LOWER) ASSY	
20	4-943-761-01	KNOB (LOCK)	
21	3-704-197-51	SCREW (M1.4X3.5), LOCKING	
22	4-943-760-02	LID (SMALL), BATTERY CASE	
* 23	4-954-107-01	SHEET (CASE)	
* 24	4-953-933-01	PLATE (FRONT), GROUND	
LCD583	1-809-296-11	DISPLAY PANEL, LIQUID CRYSTAL	

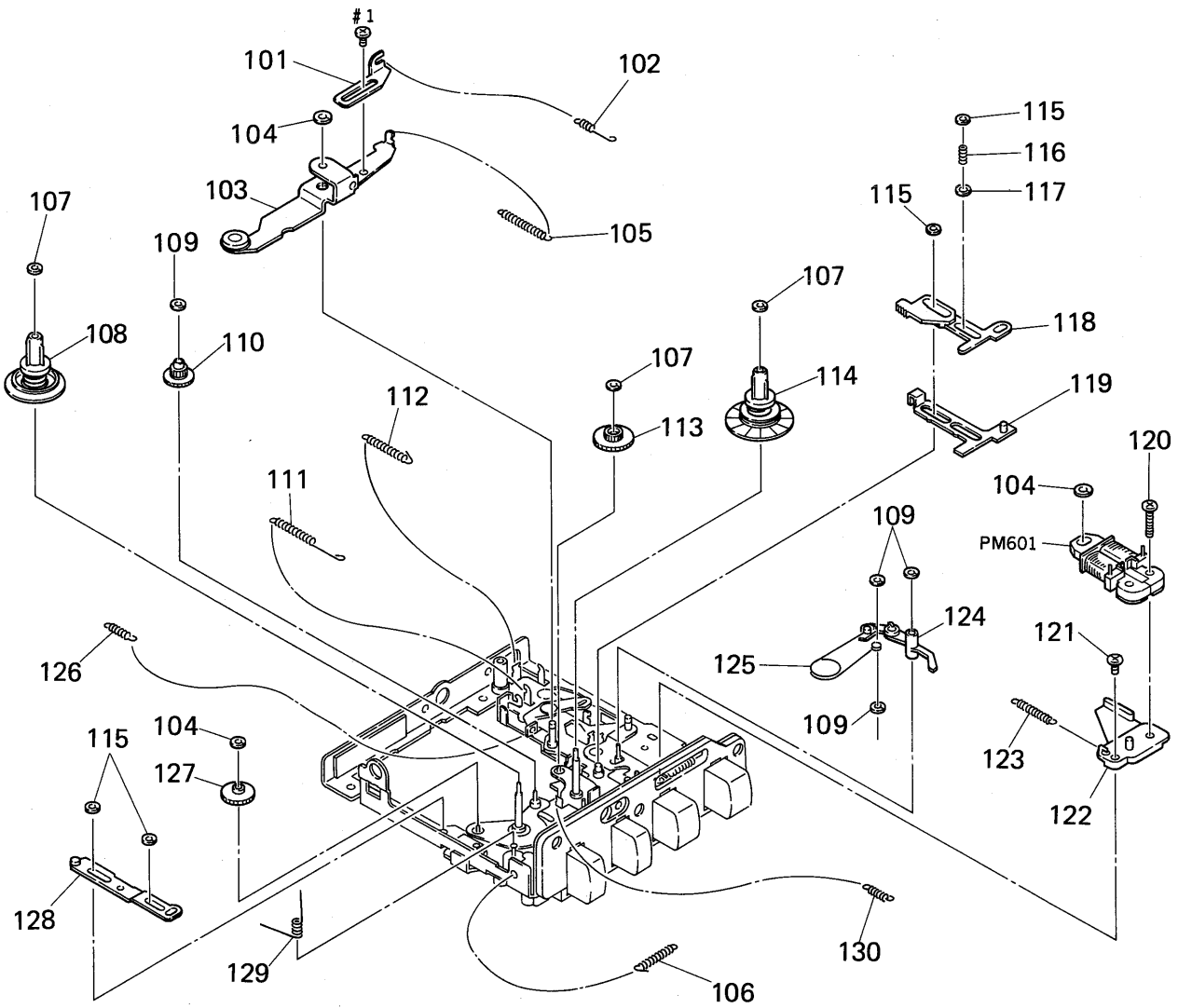
5-2. MECHANISM DECK SECTION 1 (MN-1-66)



Ref. No.	Part No.	Description	Remark
51	4-943-328-01	SPRING (POWER TENSION), TENSION	
52	3-704-197-01	SCREW (M1.4X1.6), LOCKING	
* 53	4-943-323-01	COLLAR, INSULATING	
* 54	4-947-375-01	TUBE	
* 55	4-943-317-01	ROLLER, LOCK	
56	4-943-288-01	WASHER	
57	4-943-331-01	SPRING, TORSION	
58	X-4941-353-1	RAIL ASSY	
59	3-704-197-31	SCREW (M1.4X3.0), LOCKING	
* 60	4-943-312-01	CLAMP (A), FLEXIBLE	
* 61	4-943-313-01	CLAMP (B), FLEXIBLE	

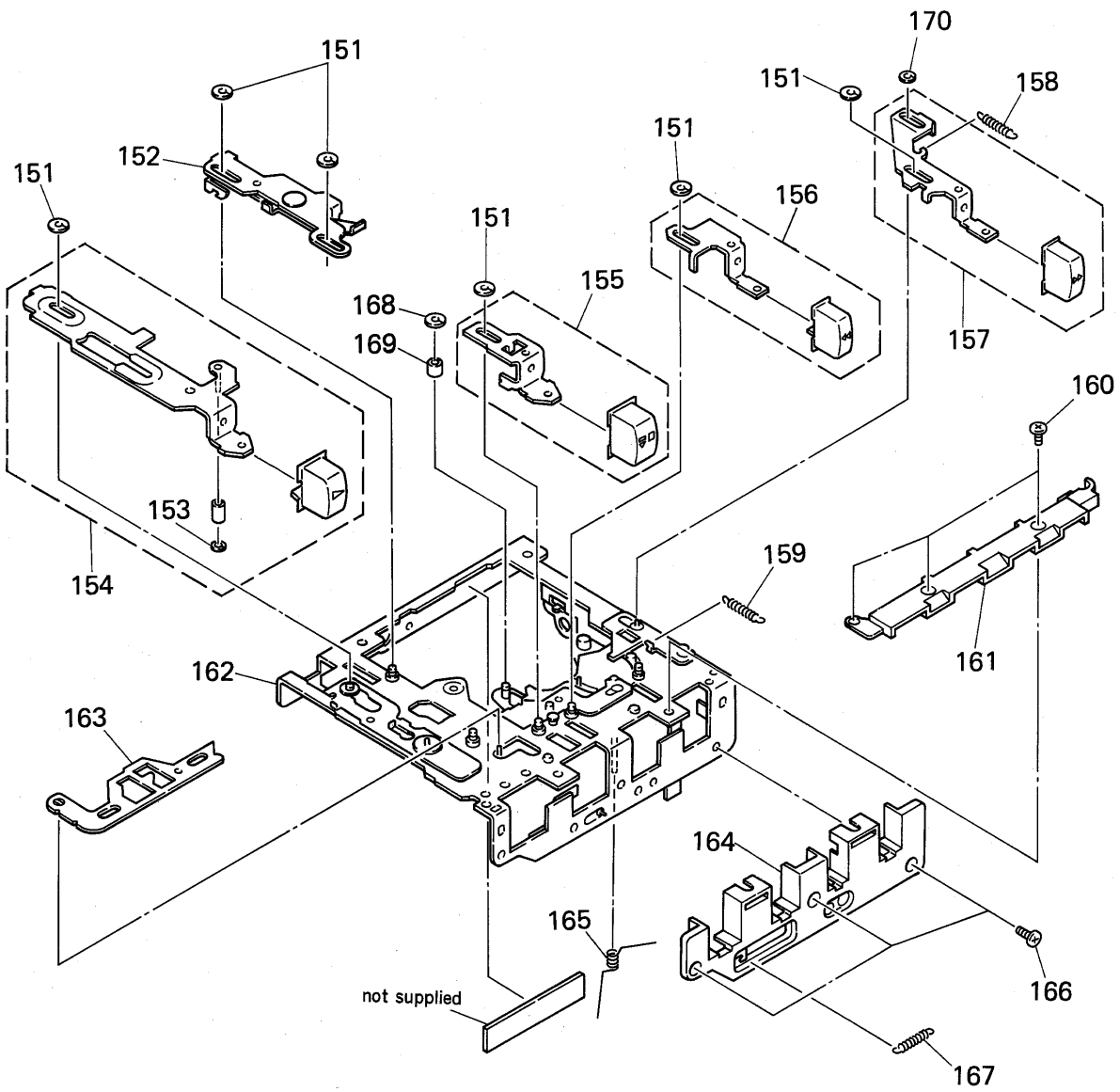
Ref. No.	Part No.	Description	Remark
62	3-704-197-11	SCREW (M1.4X2.0), LOCKING	
63	A-3270-960-A	S FLEXIBLE BOARD, COMPLETE	
64	3-703-816-06	SCREW (M1.4X1.4), SPECIAL HEAD	
65	X-4941-354-1	PLATE ASSY, SIDE	
66	X-4942-640-1	DRUM ASSY	
67	4-943-321-01	SCREW, STEP (SHAFT CS)	
68	4-943-330-01	SPRING, COMPRESSION	
69	4-943-305-01	SCREW, SPECIAL	
70	4-943-304-01	SCREW, STEP	
71	3-578-242-21	WASHER	

5-3. MECHANISM DECK SECTION 2 (MN-1-66)



Ref. No.	Part No.	Description	Remark
* 101	4-943-232-01	SLIDER, SP	
102	4-943-274-01	SPRING, TENSION (0.3 g/cm)	
102	4-943-275-01	SPRING, TENSION (0.45 g/cm)	
102	4-943-276-01	SPRING, TENSION (0.6 g/cm)	
103	X-4941-358-1	LEVER SUB ASSY, LIFT	
104	3-578-242-21	WASHER	
105	4-943-273-01	SPRING, TENSION	
106	4-943-266-01	SPRING, TENSION	
107	4-943-288-01	WASHER	
108	X-4941-911-1	TABLE ASSY, REEL, T	
109	2-625-370-01	RING, STOPPER	
110	4-943-186-01	GEAR (TU)	
111	4-943-271-01	SPRING (POWER TENSION), TENSION	
112	4-943-272-01	SPRING (POWER TENSION), TENSION	
113	4-943-197-01	GEAR (REW)	
114	X-4941-910-1	TABLE ASSY, REEL, S	
115	3-331-007-01	WASHER	
116	4-943-263-01	SPRING, COMPRESSION	
117	3-321-394-01	WASHER	
* 118	4-943-283-01	SLIDER (B), MT	
* 119	4-943-282-01	SLIDER (A), MT	
120	4-947-345-01	SCREW (M1.4X4.5)	
121	3-704-197-01	SCREW (M1.4X1.6), LOCKING	
* 122	4-943-234-01	BRACKET, PL	
123	4-943-268-01	SPRING, TENSION	
* 124	4-943-233-01	LEVER, BT	
125	4-943-258-01	WIRE, TR	
126	4-943-269-01	SPRING, TENSION	
127	4-943-196-01	GEAR (FF)	
* 128	X-4941-366-1	SLIDER ASSY, PA	
129	4-943-286-01	SPRING, TORSION	
130	4-943-267-01	SPRING, TENSION	
PM601	1-454-532-11	SOLENOID, PLUNGER	

5-4. MECHANISM DECK SECTION 3 (MN-1-66)



Ref. No.	Part No.	Description	Remark
151	3-578-242-21	WASHER	
152	X-4941-357-1	SLIDER ASSY, EJECT/STOP	
153	4-943-288-01	WASHER	
154	A-3208-445-A	LEVER ASSY, FWD	
155	A-3208-444-A	LEVER ASSY, EJECT/STOP	
156	A-3208-443-A	LEVER ASSY, REW	
157	A-3208-442-A	LEVER ASSY, FF	
158	4-943-264-01	SPRING, TENSION	
159	4-943-265-01	SPRING, TENSION	
160	3-704-197-11	SCREW (M1.4X2.0), LOCKING	

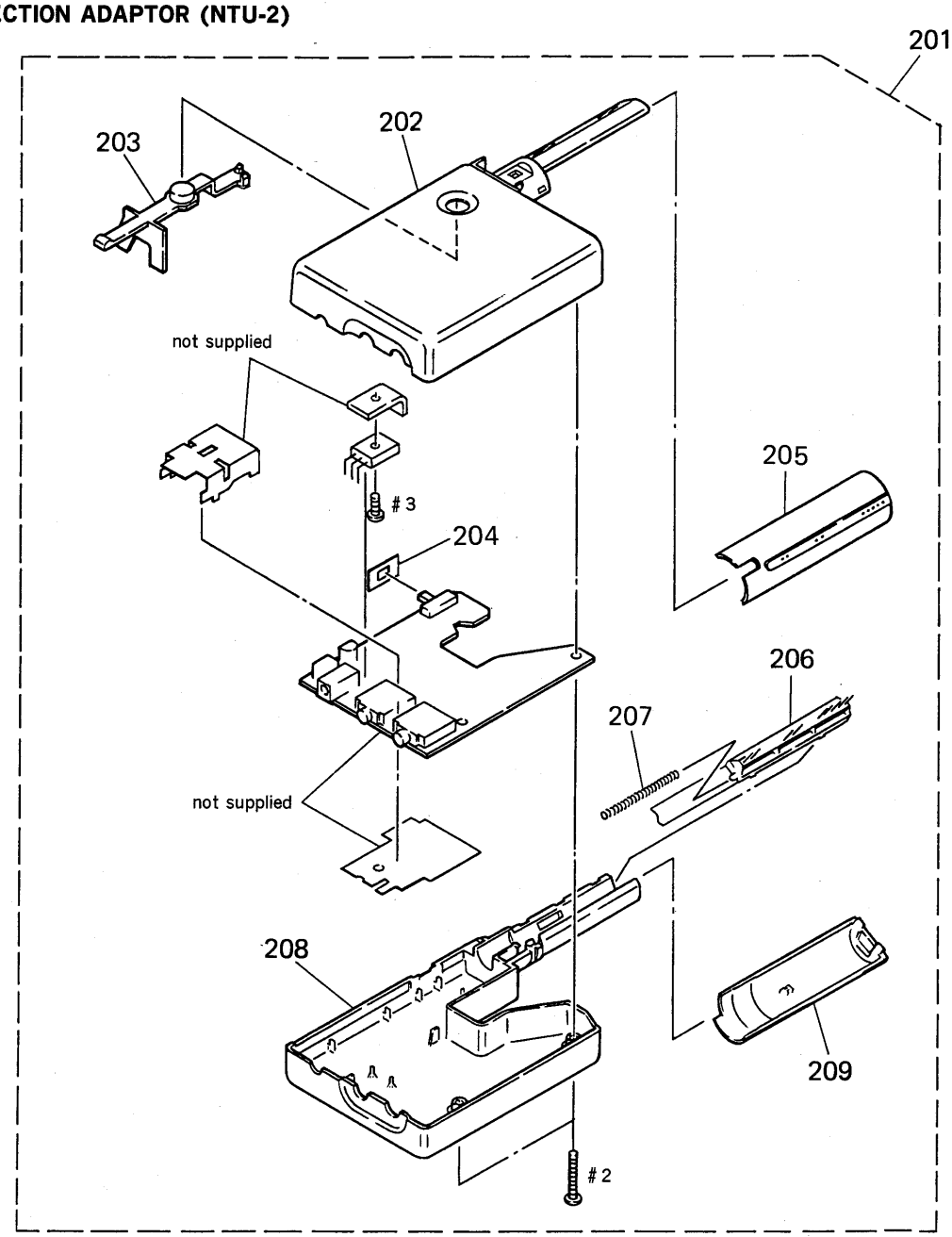
Ref. No.	Part No.	Description	Remark
* 161	4-943-236-01	HOLDER (B), BN	
162	X-4941-359-1	CHASSIS ASSY, MECHANICAL	
* 163	4-943-213-01	PLATE, LOCK	
* 164	4-943-235-01	HOLDER (A), BN	
165	4-943-262-01	SPRING, TORSION	
166	3-704-197-01	SCREW (M1.4X1.6), LOCKING	
167	4-943-287-01	SPRING, TENSION	
168	2-625-370-01	RING, STOPPER	
* 169	4-947-653-01	ROLLER (REW)	
170	3-331-007-01	WASHER	

CONNECTION ADAPTOR SECTION (NTU-2)

NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Color Indication of Appearance Parts
  Example :
  KNOB, BALANCE (WHITE)... (RED)
  ↑ ↑
  Parts Color Cabinet's Color
- Hardware (# mark) list is given in the last of this parts list.

5-5. CONNECTION ADAPTOR (NTU-2)



Ref. No.	Part No.	Description	Remark
201	1-466-509-11	ADAPTOR, CONNECTION (NTU-2)	
202	9-902-137-01	CASE (UPPER)	
203	9-902-140-01	LATCH	
204	9-902-141-01	PLATE, BLIND	
205	9-902-138-01	SLIDER (UPPER)	
206	9-902-144-01	CONTACT ASSY	
207	9-902-142-01	SPRING, RETURN	
208	9-902-136-01	CASE (LOWER)	
209	9-902-139-01	SLIDER (LOWER)	

SECTION 6
ELECTRICAL PARTS LIST

MAIN FLEXIBLE

MAIN SECTION (NT-1)

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u:μ, for example:
  uA..: μA.. uPA..: μPA..
  uPB..: μPB.. uPC..: μPC.. uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

- JE : Tourist model

Ref. No.	Part No.	Description			Remark
	A-3270-988-A	MAIN FLEXIBLE BOARD, COMPLETE			
		**********			
	9-911-840-XX	SPACER			
		< CAPACITOR >			
C101	1-126-917-11	ELECT	3300uF	20%	6.3V
C102	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C103	1-164-357-11	CERAMIC CHIP	0.001uF	5%	50V
C104	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C105	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C106	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C107	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C108	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C109	1-135-162-21	TANTALUM CHIP	33uF	20%	6.3V
C110	1-164-346-11	CERAMIC CHIP	1uF		16V
C111	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C112	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C113	1-164-346-11	CERAMIC CHIP	1uF		16V
C114	1-126-923-11	ELECT	220uF	20%	10V
C115	1-135-161-21	TANTALUM CHIP	22uF	10%	10V
C116	1-135-166-21	TANTALUM CHIP	47uF	10%	10V
C117	1-164-346-11	CERAMIC CHIP	1uF		16V
C121	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C122	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C124	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C125	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C131	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C132	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C133	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C192	1-162-282-31	CERAMIC	100PF	10%	50V
C201	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C202	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C203	1-164-346-11	CERAMIC CHIP	1uF		16V
C204	1-164-346-11	CERAMIC CHIP	1uF		16V
C205	1-162-953-11	CERAMIC CHIP	100PF	5%	50V
C206	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V
C207	1-164-346-11	CERAMIC CHIP	1uF		16V
C301	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C302	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C303	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C304	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C305	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C306	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C307	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C308	1-163-077-00	CERAMIC CHIP	0.1uF	10%	25V
C309	1-164-357-11	CERAMIC CHIP	0.001uF	5%	50V
C310	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C311	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V
C312	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C322	1-164-816-11	CERAMIC CHIP	220PF	2%	50V
C323	1-165-138-11	CERAMIC CHIP	560PF	2%	50V
C324	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C325	1-164-670-11	CERAMIC CHIP	0.0012uF	5%	16V
C326	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C327	1-135-190-21	TANTAL. CHIP	0.1uF	20%	20V
C332	1-164-816-11	CERAMIC CHIP	220PF	2%	50V
C333	1-165-138-11	CERAMIC CHIP	560PF	2%	50V
C334	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C335	1-164-670-11	CERAMIC CHIP	0.0012uF	5%	16V
C336	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C337	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C342	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C343	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C344	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C345	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C346	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C347	1-135-190-21	TANTAL. CHIP	0.1uF	20%	20V
C401	1-135-216-11	TANTALUM CHIP	10uF	20%	10V
C402	1-164-506-11	CERAMIC CHIP	4.7uF		16V
C403	1-164-357-11	CERAMIC CHIP	0.001uF	5%	50V
C404	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C405	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C406	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C407	1-135-216-11	TANTALUM CHIP	10uF	20%	10V
C408	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C410	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C411	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C412	1-164-813-11	CERAMIC CHIP	15PF	2%	50V
C413	1-162-941-11	CERAMIC CHIP	10PF	0.5PF	50V

MAIN FLEXIBLE

Ref. No.	Part No.	Description		Remark
C421	1-162-974-11	CERAMIC CHIP 0.01uF		50V
C422	1-162-974-11	CERAMIC CHIP 0.01uF		50V
C423	1-164-156-11	CERAMIC CHIP 0.1uF		25V
C424	1-164-005-11	CERAMIC CHIP 0.47uF		25V
C431	1-162-974-11	CERAMIC CHIP 0.01uF		50V
C432	1-162-974-11	CERAMIC CHIP 0.01uF		50V
C433	1-164-156-11	CERAMIC CHIP 0.1uF		25V
C434	1-164-005-11	CERAMIC CHIP 0.47uF		25V
C901	1-135-211-11	TANTAL. CHIP 6.8uF	20%	6.3V
C902	1-135-091-00	TANTALUM CHIP 1uF	20%	16V
C903	1-135-233-21	TANTAL. CHIP 0.33uF	20%	16V
C904	1-135-233-21	TANTAL. CHIP 0.33uF	20%	16V
C905	1-164-156-11	CERAMIC CHIP 0.1uF		25V
C907	1-162-951-11	CERAMIC CHIP 68PF	5%	50V
C908	1-162-951-11	CERAMIC CHIP 68PF	5%	50V
C909	1-162-951-11	CERAMIC CHIP 68PF	5%	50V
C911	1-135-072-21	TANTALUM CHIP 0.22uF	10%	35V
C912	1-164-005-11	CERAMIC CHIP 0.47uF		25V
C913	1-135-072-21	TANTALUM CHIP 0.22uF	10%	35V
C914	1-164-005-11	CERAMIC CHIP 0.47uF		25V
C915	1-135-181-21	TANTALUM CHIP 4.7uF	20%	6.3V
C916	1-164-362-11	CERAMIC CHIP 470PF	5%	50V
C917	1-164-362-11	CERAMIC CHIP 470PF	5%	50V
C918	1-135-201-11	TANTALUM CHIP 10uF	20%	4V
C921	1-164-357-11	CERAMIC CHIP 0.001uF	5%	50V
C922	1-164-357-11	CERAMIC CHIP 0.001uF	5%	50V
		< CONNECTOR >		
* CN191	1-573-015-11	HOUSING, CONNECTOR (FPC) 6P		
* CN192	1-691-323-11	HOUSING, CONNECTOR (FPC) 10P		
CN491	1-568-558-21	HOUSING, CONNECTOR (FPC) 8P		
		< JACK >		
CN996	1-573-014-21	JACK (MIC)		
CN997	1-573-014-11	JACK (PHONES)		
		< DIODE >		
D180	8-719-105-58	DIODE RD3.9M-B2		
D181	8-719-941-04	DIODE SB007-03CP		
D182	8-719-941-04	DIODE SB007-03CP		
D183	8-719-975-46	DIODE RB471E		
D184	8-719-941-86	DIODE DAN202U		
D186	8-719-020-74	DIODE MA718		
D187	8-719-020-74	DIODE MA718		
D986	8-719-941-09	DIODE DAP202U		

Ref. No.	Part No.	Description	Remark
		< FERRITE BEAD >	
FB385	1-543-949-21	BEAD, FERRITE (CHIP)	
FB392	1-543-948-21	BEAD, FERRITE (CHIP)	
FB941	1-543-948-21	BEAD, FERRITE (CHIP)	
FB942	1-543-948-21	BEAD, FERRITE (CHIP)	
FB943	1-543-948-21	BEAD, FERRITE (CHIP)	
FB947	1-543-948-21	BEAD, FERRITE (CHIP)	
		< IC >	
IC1	8-759-038-80	MPC1713	
IC2	8-759-078-68	IC LZ841031	
IC3	8-759-551-68	M6M80021FP	
IC4	8-759-231-13	IC TA8145FN	
IC5	8-759-153-06	IC CXD1330Q	
IC6	8-759-517-27	IC MB81C4256A-80	
IC7	8-759-323-37	IC HD49305	
IC8	8-759-323-36	IC HD49308	
IC9	8-752-034-94	CXA1275Q	
IC10	8-759-512-55	IC S-3520CF	
IC11	8-759-234-77	IC TC4S66F	
IC12	8-759-234-77	IC TC4S66F	
IC13	8-759-031-84	IC SC7S04F	
		< COIL >	
L141	1-424-501-11	COIL 36uH	
L142	1-424-502-11	COIL 36uH	
L143	1-424-501-11	COIL 36uH	
L144	1-412-031-11	INDUCTOR CHIP 47uH	
L390	1-412-206-11	INDUCTOR 1mH	
L391	1-412-206-11	INDUCTOR 1mH	
L442	1-410-946-31	INDUCTOR CHIP 22uH	
		< TRANSISTOR >	
Q481	8-729-921-08	TRANSISTOR DTC144TU	
Q482	8-729-924-04	TRANSISTOR DTA143TU	
Q483	8-729-921-08	TRANSISTOR DTC144TU	
Q484	8-729-924-04	TRANSISTOR DTA143TU	
Q982	8-729-429-74	TRANSISTOR 2SC3929	
Q983	8-729-429-74	TRANSISTOR 2SC3929	
Q984	8-729-905-12	TRANSISTOR DTA144EU	
		< RESISTOR >	
R151	1-218-732-11	METAL CHIP 47K 0.50%	1/16W
R154	1-216-831-11	METAL CHIP 6.8K 5%	1/16W
R160	1-216-857-11	METAL CHIP 1M 5%	1/16W
R161	1-218-315-11	METAL GLAZE 1K 1%	1/16W
R162	1-218-720-11	METAL CHIP 15K 0.50%	1/16W

REVISED

MAIN FLEXIBLE

S FLEXIBLE

Ref. No.	Part No.	Description			Remark
R163	1-218-720-11	METAL CHIP	15K	0.50%	1/16W
R164	1-216-817-11	METAL CHIP	470	5%	1/16W
R165	1-218-720-11	METAL CHIP	15K	0.50%	1/16W
R166	1-216-853-11	METAL CHIP	470K	5%	1/16W
R167	1-216-821-11	METAL CHIP	1K	5%	1/16W
R168	1-218-745-11	METAL CHIP	160K	0.50%	1/16W
R169	1-218-745-11	METAL CHIP	160K	0.50%	1/16W
R170	1-236-428-11	NETWORK, RES	22KX2		
R172	1-236-426-11	NETWORK, RES	15KX2		
R174	1-218-332-11	METAL GLAZE	130K	5%	1/16W
R201	1-216-838-11	METAL CHIP	27K	5%	1/16W
R202	1-216-809-11	METAL CHIP	100	5%	1/16W
R351	1-218-877-11	METAL GLAZE	18K	1%	1/16W
R361	1-216-838-11	METAL CHIP	27K	5%	1/16W
R362	1-218-735-11	METAL CHIP	62K	0.50%	1/16W
R363	1-218-721-11	METAL CHIP	16K	0.50%	1/16W
R364	1-218-721-11	METAL CHIP	16K	0.50%	1/16W
R365	1-216-857-11	METAL CHIP	1M	5%	1/16W
R371	1-216-838-11	METAL CHIP	27K	5%	1/16W
R372	1-218-735-11	METAL CHIP	62K	0.50%	1/16W
R373	1-218-721-11	METAL CHIP	16K	0.50%	1/16W
R374	1-218-721-11	METAL CHIP	16K	0.50%	1/16W
R375	1-216-857-11	METAL CHIP	1M	5%	1/16W
R381	1-218-739-11	METAL CHIP	91K	0.50%	1/16W
R382	1-216-842-11	METAL CHIP	56K	5%	1/16W
R451	1-216-834-11	METAL CHIP	12K	5%	1/16W
R452	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R453	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R454	1-218-305-11	METAL GLAZE	22K	1%	1/16W
R456	1-218-301-11	METAL GLAZE	3.9K	1%	1/16W
R457	1-216-797-11	METAL CHIP	10	5%	1/16W
R461	1-218-300-11	METAL GLAZE	3.3K	1%	1/16W
R462	1-216-841-11	METAL CHIP	47K	5%	1/16W
R463	1-218-889-11	METAL GLAZE	56K	1%	1/16W
R464	1-216-843-11	METAL CHIP	68K	5%	1/16W
R471	1-218-300-11	METAL GLAZE	3.3K	1%	1/16W
R472	1-216-842-11	METAL CHIP	56K	5%	1/16W
R473	1-218-889-11	METAL GLAZE	56K	1%	1/16W
R474	1-216-843-11	METAL CHIP	68K	5%	1/16W
R951	1-218-321-11	METAL GLAZE	33K	1%	1/16W
R952	1-218-720-11	METAL CHIP	15K	0.50%	1/16W
R953	1-216-845-11	METAL CHIP	100K	5%	1/16W
R954	1-216-845-11	METAL CHIP	100K	5%	1/16W
R955	1-216-809-11	METAL CHIP	100	5%	1/16W
R957	1-218-321-11	METAL GLAZE	33K	1%	1/16W
R958	1-218-321-11	METAL GLAZE	33K	1%	1/16W
R959	1-218-321-11	METAL GLAZE	33K	1%	1/16W
R961	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R962	1-216-853-11	METAL CHIP	470K	5%	1/16W
R963	1-216-813-11	METAL CHIP	220	5%	1/16W
R964	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R965	1-216-828-11	METAL CHIP	3.9K	5%	1/16W
R966	1-216-853-11	METAL CHIP	470K	5%	1/16W
R967	1-216-813-11	METAL CHIP	220	5%	1/16W
R968	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R969	1-216-820-11	METAL CHIP	820	5%	1/16W
R970	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R971	1-216-835-11	METAL CHIP	15K	5%	1/16W
R972	1-216-821-11	METAL CHIP	1K	5%	1/16W
R973	1-216-857-11	METAL CHIP	1M	5%	1/16W
R974	1-216-857-11	METAL CHIP	1M	5%	1/16W
		< SWITCH >			
S591	1-572-921-11	SWITCH, KEY BOARD (CLOCK SET)			
S592	1-572-921-11	SWITCH, KEY BOARD (RESET)			
S593	1-572-921-11	SWITCH, KEY BOARD (MODE)			
S991	1-572-921-11	SWITCH, KEY BOARD (REC)			
S992	1-572-921-11	SWITCH, KEY BOARD (VOL -)			
S993	1-572-921-11	SWITCH, KEY BOARD (VOL +)			
S994	1-572-922-11	SWITCH, SLIDE (STOP HOLD)			
		< VIBRATOR >			
X149	1-577-316-11	VIBRATOR, CRYSTAL (32.768kHz)			
X241	1-579-288-11	VIBRATOR, CRYSTAL (12.288MHz)			

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A-3270-960-A S FLEXIBLE BOARD, COMPLETE

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		< PHOTO REFLECTOR >			
PH601	8-719-988-14	PHOTO REFLECTOR PR-11-B			
		< SWITCH >			
S601	1-572-640-11	SWITCH, LEAF (FWD DET)			
S602	1-572-640-11	SWITCH, LEAF (REW DET)			
S603	1-572-641-11	SWITCH, LEAF (PAUSE)			
S604	1-572-639-11	SWITCH, LEAF (FF DET)			
S605	1-572-680-11	SWITCH, MICRO (RECOGNITION)			
		< RESISTOR >			
R601	1-216-077-00	METAL CHIP	15K	5%	1/10W
R602	1-216-085-00	METAL CHIP	33K	5%	1/10W

****

Ref. No.	Part No.	Description	Remark
		MISCELLANEOUS	
		**********	
15	1-535-891-11	CONDUCTIVE BOARD, CONNECTION	
LCD583	1-809-296-11	DISPLAY PANEL, LIQUID CRYSTAL	
PM601	1-454-532-11	SOLENOID, PLUNGER	
**********			
		ACCESSORIES & PACKING MATERIALS	
		**********	
	X-3336-715-1	STAND ASSY, MICROPHONE	
⚠	1-465-818-21	ADAPTOR, AC (AC-E15L) (AEP)	
⚠	1-466-509-11	ADAPTOR, CONNECTION (NTU-2)	
	1-511-047-11	ATTENUATOR, MICROPHONE (NTU-3)	
	1-528-357-11	BATTERY, LITHIUM (CR1220)	
	1-542-071-11	MICROPHONE (C-3001)	
	1-555-658-21	CORD, CONNECTION	
⚠	1-569-007-11	ADAPTER, CONVERSION 2P (JE)	
⚠	1-693-148-12	ADAPTOR, AC (AC-NT1) (JE)	
⚠	1-693-153-11	ADAPTOR, AC (AC-NT1) (UK)	
⚠	1-693-154-11	ADAPTOR, AC (AC-NT1) (US, Canadian)	
	2-284-602-11	BUSHING	
	2-538-607-01	SHEET, INSULATING	
	2-538-612-01	KNOB, SWITCH	
*	3-373-007-01	CUSHION	
*	3-373-009-01	INDIVIDUAL CARTON (JE)	
	3-545-657-11	BUSH	
*	3-701-620-00	BAG, POLYETHYLENE (US, AEP, UK, JE)	
*	3-703-713-41	STICKER, SONY SYMBOL (10)	
	3-754-267-21	MANUAL, INSTRUCTION (ENGLISH) (US, UK)	
	3-754-267-31	MANUAL, INSTRUCTION (ENGLISH, FRENCH, SPANISH, GERMAN) (Canadian, AEP, JE)	
	3-754-267-41	MANUAL, INSTRUCTION (DUTCH, SWEDISH, ITALIAN, PORTUGUESE) (AEP)	
	3-754-267-51	MANUAL, INSTRUCTION (JAPANESE, KOREAN: DIGEST TYPE) (JE)	
	4-948-129-01	CASE, CARRYING	
	7-685-105-19	SCREW +P 2X8 TYPE2 NON-SLIT	
	8-953-400-90	HEADPHONE MDR-E552 SET	
	9-911-839-XX	CUSHION, LOCK PLATE	
**********			

****
HARDWARE LIST
****

#1	7-627-551-07	SCREW, PRECISION +P 1.4X1.6

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

ADAPTOR

CONNECTION ADAPTOR SECTION (NTU-2)
NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal-film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u:μ, for example:
  uA..: μA.. uPA..: μPA..
  uPB..: μPB.. uPC..: μPC.. uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH

When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description			Remark
		ADAPTOR BOARD			
		**********			
		< CAPACITOR >			
C1	1-126-162-11	ELECT	3.3uF	20% 50V	
C2	1-126-162-11	ELECT	3.3uF	20% 50V	
C3	1-126-160-11	ELECT	1uF	20% 50V	
C4	1-126-160-11	ELECT	1uF	20% 50V	
C5	1-163-117-00	CERAMIC CHIP	100PF	5% 50V	
C6	1-163-117-00	CERAMIC CHIP	100PF	5% 50V	
C7	1-124-465-00	ELECT	0.47uF	20% 50V	
		< DIODE >			
D1	8-719-973-65	DIODE	RLZ-J15		
D2	8-719-973-65	DIODE	RLZ-J15		
D3	8-719-973-65	DIODE	RLZ-J15		
D4	8-719-973-65	DIODE	RLZ-J15		
D5	8-719-973-65	DIODE	RLZ-J15		
D6	8-719-973-65	DIODE	RLZ-J15		
D7	8-719-911-19	DIODE	1SS119		
D8	8-719-933-30	DIODE	DA210S		
D9	8-719-973-65	DIODE	RLZ-J15		
D10	8-719-933-28	DIODE	DAP209S		
		< JACK >			
J1	1-580-372-11	JACK, DC (DC IN 1.5V)			
J2	1-691-674-11	JACK, STEREO MINI (5P)			(LINE IN)
J3	1-691-674-21	JACK, STEREO MINI (3P)			(LINE OUT)
		< COIL >			
L1	1-408-397-00	INDUCTOR	1uH		
L2	1-408-397-00	INDUCTOR	1uH		
L3	9-902-143-01	COIL, CHOKE			
L5	1-409-490-11	FILTER, TRAP (63kHz)			
L6	1-409-490-11	FILTER, TRAP (63kHz)			
		< TRANSISTOR >			
Q1	8-729-927-14	TRANSISTOR	DTC323TS		
Q2	8-729-927-14	TRANSISTOR	DTC323TS		
Q3	8-729-119-76	TRANSISTOR	2SA1175-HFE		
Q4	8-729-208-33	TRANSISTOR	2SK363-V		
Q5	8-729-177-23	TRANSISTOR	2SB772		
		< RESISTOR >			
R1	1-216-051-00	METAL GLAZE	1.2K	5% 1/10W	
R2	1-216-051-00	METAL GLAZE	1.2K	5% 1/10W	
R3	1-216-049-00	METAL GLAZE	1K	5% 1/10W	
R4	1-216-049-00	METAL GLAZE	1K	5% 1/10W	
R5	1-216-057-00	METAL GLAZE	2.2K	5% 1/10W	
R6	1-216-057-00	METAL GLAZE	2.2K	5% 1/10W	
R7	1-216-105-00	METAL GLAZE	220K	5% 1/10W	
R8	1-220-236-11	METAL GLAZE	6.8	10% 1/4W	
R9	1-220-240-11	METAL GLAZE	15	5% 1/4W	
R10	1-216-081-00	METAL GLAZE	22K	5% 1/10W	
R11	1-216-073-00	METAL GLAZE	10K	5% 1/10W	
R12	1-216-097-00	METAL GLAZE	100K	5% 1/10W	
		< SWITCH >			
S1	1-572-571-11	SWITCH (REC MONITOR)			

****

****
HARDWARE LIST
****

#2	7-685-855-09	SCREW, +BVTT 2X12
#3	7-682-546-04	SCREW, +B 3X5

9-956-723-11
(Including 9-956-723-91)

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NT-1
NTU-2

SONY
SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model
Tourist Model

SUPPLEMENT-1

File this supplement with the service manual.

ADJUSTMENTS

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TRACE MONITOR Ⅲ MANUAL

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SECTION 7
ADJUSTMENT

1. Testing Mode

This mode is used to measure the response of an amplifier. 'NT-1' Main Unit conditions must be pre-set as follows when using this mode.

1-1. Setting Methods of Testing Mode

Setting : Press the REC and CLOCK SET buttons of the 'NT-1' Main Unit for about 2 sec continuously.

Release : Release by pressing the REC and CLOCK SET buttons of the 'NT-1' Main Unit or by pressing the REC and MODE buttons, simultaneously. It can also be automatically released when power is turned off.

1-2. Contents of Pre-setting

1. 〈RECORDED TIME〉 on the LCD panel blinks. This indicates that the 'NT-1' Main Unit is in TEST mode.

2. AGC recording mode is changed to MANUAL recording. And REC VOL value is set to 26.

3. PB VOL value is set to 22.

4. The power is not turned off after 5 Min even if it is in STOP mode.

2. Service Mode

The NVRAM data can be read or written by using this mode without the TRACE MONITOR Ⅲ being connected.

2-1. Setting Methods of Service Mode

Setting : Press the REC, MODE, and CLOCK SET buttons of the 'NT-1' Main Unit for about 2 sec.

Release : Press the REC, MODE, and CLOCK SET buttons of the 'NT-1' Main Unit, simultaneously. Another method is to put the STOP MODE slides in HOLD position, after 5 sec the set will power off automatically.

Note : If the NVRAM data was changed, the rewritten data becomes effective only when releasing the service mode according to the above methods and the Auto-Power-Off sequence is performed correctly.

2-2. Contents of Operation

1. Y : M, M : D, H, M and : on the LCD panel blinks. This indicates when 'NT-1' Main Unit is in service mode.

2. 2 bytes of the memory data is displayed on the LCD panel.

3. Press the CLOCK SET button and the address equivalent to the data that is displayed to the right column of the 2 bytes data on the LCD panel.

4. Address can be changed by pressing CLOCK SET button and VOL + side or the CLOCK SET button and VOL − side, simultaneously.

5. Data can be changed by pressing the MODE button and VOL + side or the MODE button and VOL − side, simultaneously.

6. 'NT-1' Main Unit does not turn the power off for 5 Min even if it is in STOP mode.

3. Jigs & Tools

• Usable cassette

		(P/ N)
NQ-12 ·····	Torque cassette tape for FWD/ BT	8-909-708-82
NQ-22 ·····	Torque cassette tape for FF/ REW	8-909-708-83
NK-101 ·····	For measuring of tape speed and of playback error rate.	3-378-806-11
NK-S501·····	For measuring of playback level and of F response.	3-378-813-11
NTC-60 ·····	Blank tape for recording and for playbacking. (products on the market)	8-892-310-75
NTC-10CL···	Cleaning tape. (products on the market)	8-883-114-16

• Jigs & others

1. TRACE MONITOR Ⅲ (TMⅢ)

2. Adapter unit for jig

3. Connecting cable for TRACE MONITOR Ⅲ

4. DC power supply cord with plug

4. Electrical Adjustment Procedures

4-1. Initializing of NVRAM

With this procedure it is possible to rewrite the data addresses FF80H to FFFFH in the 'NT-1' Main Unit NVRAM (non-volatile RAM). This is performed with TM Ⅲ. If this operation is done, all the adjusting values are reset. This must not be executed except for the following conditions.

1. When IC3 (M6N80021FP) is replaced.

2. nErr message displayed on the LCD panel of 'NT-1' Main Unit when operating, despite the fact that IC3 and all other devices are connected properly.

3. When it takes too much time to write data manualy, this able to a large amount of data to be written even despite any previous ex-factory setting of the NV RAM.

   Install the adapter unit to 'NT-1' Main Unit and connect TMⅢ to adapter the unit using the connecting cable for TMⅢ. (For details of TMⅢ operating methods, please refer to SECTION 8.)

Writing Data in NVRAM

Writing data in NVRAM, is carried out when 'NT-1' Main Unit is changed from STOP mode (LCD lights) to Auto-Power-Off (LCD light off). This data will be reflected when 'NT-1' Main Unit is turned to power on.
The NV FLG is necessary to execute this writing operation and it is necessary when the data of NVRAM should be changed, also the NV FLG should be initialized, if you want to rewrite the data of NVRAM.
To initialize NV FLG press numerical key [0] on the display for special function. Beside, if it is in service mode, NV FLG is initialized automatically.
When TMⅢ enters this mode by pressing [NV INIT] key, it displays the menu for selecting initializing data.

[NV INIT MENU FOR SELECTING INITIALIZING DATA]

```
Sel : ←  →   Go : NV INIT
 ROM 20.3          INIT
```

← Lavel of initializing data

In this menu, press Right [→] and Left [←] arrow key to select initializing data.
These data has been written in ROM inside jig.
The ROM can contain up to 16 data patterns.
At this morment the following two data patterns have been written in ROM.

Label	Contents
"ROM20.3 INIT"	Initialize all the data of NVRAM. Be sure to perform this when you exchanged the NVRAM.
"ROM20.3 SHIP"	NVRAM setting data for shipment. This initialization is required under ex-factory (after repair) circumstance. (Volume Level, tape counter, etc.)

If you press [NV INIT] key again after you selected initializing data, the jig starts initializing. When the 'NT-1' Main Unit is in "STOP" mode, the jig will not start initializing.
Normally, turn on the power of 'NT-1' Main Unit by pressing its CLOCK SET button, and then, conduct initializing operation.
While initializing, the LCD of 'NT-1' Main Unit blinks 4 times (ON=OFF).
When initialization is completed correctly, the LCD on 'NT-1' Main Unit displays normal count and powers off.
LCD on TMⅢ displays the menu for selecting initializing data.

4-2. Verification of Voltage Attenuation Control

'NT-1' Main Unit is in clock set mode by pressing its CLOCK SET button. Verify that the power of the 'NT-1' Main Unit is as follows when the supplied voltage changes from 1.05 V to 0.85 V.

- 1.05V: Display on the LCD panel is normal and power remains on.
- 0.95V: The LCD indicates a low power situation (battery low) but does not power off.
- 0.85V: For a short moment the LCD indicates low power and hence it power off.

Be sure that the supply voltage is set correctly by using a digital tester.
If the specifications were not met, connect TMⅢ to 'NT-1' Main Unit and put it in data monitor mode.
Then, change the data of ADRS FF83H to 35 to 38. (Average of ex-factory is set at 37.)

4-3. PG Phase Control

This control is available to remedy against possible deviations in the PG coil position.
Data attached to the replaced DRUM Ass'y can be written in NVRAM of 'NT-1' Main Unit by TMⅢ only after replacing the DRUM Ass'y.
Address are FF80H to FF82H.

• Adjustment procedures

1. Put TMⅢ in data monitor mode.
2. Press the CLOCK SET button of the 'NT-1' Main Unit to set the clock time and input FF80 on the keyboard.
3. Input the data attached to replacement DRUM Ass'y; A : ＊＊(FF82H) and B : ＊＊＊＊(FF81H, FF 80H), to the data of each address from keyboard.
4. Put TMⅢ in special function mode by pressing [＊] key and press numerical key [0] (NV FLG ON).
5. Press the CLOCK SET button of 'NT-1' Main Unit to change display on the LCD to counter mode. The 'NT-1' Main Unit will Auto-Power-Off and hereby the data is written correctly.

• Verification

Be sure that the data of FF80H to FF82H are stored completely, when the power is turned on again.

4-4. Adjustment of REC Level Control

This adjustment is controled by TMⅢ and the data are written to the address FF88H in NVRAM.

• Adjustment procedures

1. Put TMⅢ in data monitor mode.
2. Insert a recordable tape to the 'NT-1' Main Unit. Then, put it in testing mode by pressing REC and CLOCK SET buttons for 2 sec, simultaneously.
3. Move the cursor to the ADRS point by operating Left [←] or Right [→] arrow key and input FE50.
4. Apply a signal of 1KHz at −13.7dBs from the LINE IN and put the 'NT-1' Main Unit in REC mode.

5. If the data are out of the 1C00 to 24EB span in the address area FE51, FE50 (Lch) or FE53, FE52 (Rch), data of FF88H should be changed as follows.

   24EB or more···Data in address FF88H should be changed from
   00H to 01H (−2dB)
   1C00 or less·····Data in address FF88H should be changed from
   00H to FFH (+2dB)
   [00H=0dB]

6. If the data FF88H were changed :
   Put TM Ⅲ in special function mode by pressing [*] key and turn the NV FLG on by pressing numerical key [0].
7. Put 'NT-1' Main Unit in STOP mode and wait for the Auto-Power-Off.

• Verification
Apply a signal of 1KHz at −13.7dBs and put the 'NT-1' Main Unit in REC mode while it is in testing mode.
Verify that the level of LINE OUT is as follows.

Both L and R ch : −13.7dBs ± 1.5dBs
Difference between channels : within 1dB

4-5. Torque Measurement

Measurement is same as on a tape recorder.

• Torque cassette NQ-12 for FWD/ BT
NQ-22 for FF/ REW

• Specifications FWD ·····1.2 to 3.4 g·cm
B.T·····0.3 to 0.75 g·cm
FF ····· 3 to 11.5 g·cm
REW ·····3 to 10 g·cm

4-6. Measurement of Clock Frequency

Measure the frequency of the test point (IC10 Pin8) with a counter in the power on condition.

• Specification 1024Hz ± 0.047Hz

4-7. Measurement of the Error Rate

If you press the [ERR RATE] key, TM Ⅲ enters error rate measuring mode. This jig measures and displays the error rate in playback of the 'NT-1' Main Unit.

[ERROR RATE DISPLAY]

A : XX. XX% XX. XX%	upper row : error rate of A head
B : XX. XX% XX. XX%	lower row : error rate of B head

[ADRS] [+3] [+2] [+1] [+0]
[CURRENT] [AVERAGE]

This jig displays on error rate every 1.25 sec on the CURRENT column, and the averaged error rate for 20 times-measurements on the AVERAGE column.
Averaged error rate is calculated only once after you pressed [ERR RATE] key.
While calculating, the display shows "**.**" marks on AVERAGE column.
If you want to get the averaged error rate again, press [ERR RATE] key again.

Immediately after you start playback 'NT-1', the error rate is not measured accurately.
If you want to get on accurate error rate, you should press [ERR RATE] key to start the measurement after you played back the 'NT-1' Main Unit for a short while.

• PB Error Rate
1. Insert a standard tape (NK-101) to the 'NT-1' Main Unit and measure the error rate in playback mode.

• OA Error Rate
1. Insert Blank tape (NTC-60) in to the 'NT-1' Main Unit and apply a signal of 1KHz at −1.7dBs from the LINE IN.
2. Put it in testing mode and record this signal.
   (REC level is set at 26 automatically.)
3. After recording for 50 sec, rewind the recorded portion and play it back.
   Then, measure its error rate.

   Specification : Both PB/OA 2×10^{-2} or less

4-8. Adjustment of Recording Current

The value of the OA error rate is a little changed by the value of the recording current.
If only the OA error rate is NG (PB error rate is OK.), changed the recording current value (FF84H to FF87H) to the value of ① or ② as follows with the TM Ⅲ.
Then, measure the OA error rate again.

With this adjustment slight improvements can be obtained.

	FF87H	FF86H	FF85H	FF84H
①	18	18	18	18 (Initializing value)
②	1C	14	1C	14

*Both in the PB and OA measurement, 200 count (counter value of the 'NT-1' Main Unit) of the TOP and END of a tape should not be used.

*Burst errors due to tape damage should not be counted to the measuring value.

*The DRUM Ass'y should be kept clean. (use cleaning tape)

4-9. Measurement of Amplifier Response

• Measuring standard

Source impedance	MIC	300 Ω
	LINE	1 kΩ
Loaded impedance	HP	16 Ω
	LINE	47 kΩ
Standard input level	MIC	−55 dBs
	LINE	−13.7 dBs
Power supply	DC	1.5 V
	AC	accessory AC adapter of 'NT-1' (AC-NT1)

0dBs=0.775V

STOP MODE switch	OFF
PAUSE switch	OFF
Adapter unit	connection condition (REC MONITOR switch : ON)

• PB response

Measuring methods are same as on a tape recorder, used tape : NK-S501

• Contents of the recording on NK-S501

Frequency (Hz)	Level (dB)	Emphasis	Recording time (min.)
− − −	−∞	ON	0.5
1 k	−12	ON	1.0
14.5 k	−12	ON	0.5
10	−12	ON	0.5
14.5 k	−12	OFF	0.5
1 k	0	ON	0.5
− − −	−∞	ON	0.5
1 k	L : 0, R : −∞	ON	0.5
1 k	L : −∞, R : 0	ON	0.5

These contents are recorded as a one cycle, two cycles are recorded from the TOP on the A-side. The value of the digital full scale equal 0dBs (LINE OUT is at −13.7dBs when playing back the −12dB portion of the tape by in the 'NT-1' Main Unit.)

Reference Value of Measurement

PB level : LINE OUT is at −13.7dBs ± 1.5dB when playing back the portion of 1KHz at −12dB.

PB F response : Playback level of 1KHz at −12dB is the standard, the 10Hz and 14.5KHz signals should be within a $0dB^{+1}_{-3}$ dB compared with the standard level.

• OA Response

Measuring method is same as on a tape recorder, however, you have to record in testing mode.
Tape : NTC-60

Reference Value of Measurement

OA level

LINE IN : recording and playback 1KHz at −13.7dBs
LINE OUT : −13.7dBs ± 2dB

OA F response

LINE IN : recording and playback 1KHz, 10Hz, and 14 KHz each −13.7dBs.
LINE OUT : 1KHz is decided as a standard, 10Hz and 14.5KHz are $0dB^{+1}_{-3}$ dB.

4-10. Measurement of Current Consumption

This measuring method can be performed without TMⅢ. The value of current consumption of the adapter unit is not included in this measurement.
The tape should be recorded. (Current at the playback mode changes slightly, if using a blank tape when measuring.)

・Specifications

PLAY	210 mA or less
REC/ PLAY	190 mA or less
FF/ REW	110 mA or less
STOP	80 mA or less (LCD is turned on in STOP mode.)
STBY	50 μA or less (LCD is turned off in STOP mode.)
CLOCK BACK UP	4 μA or less (3.0V power supply is obtained from the lithium battery end.)

4-11. Head Cleaning

This should be done before the ex-factory. (after repair)
Use a NTC-10CL tape and put 'NT-1' Main Unit in playback mode for 10 to 15 sec.

4-12. Ex-factory setting of the NV DATA (after repair)

This setting is for unifying the condition of the 'NT-1' Main Unit (NVRAM) when it is delivered to customers and also for verifying that the prescribed data have been written.
This procedure, should be done when all processes are finished completely. After finishing, the power should not be on.

・Operation procedures

1. Press [NV INIT] key of TMⅢ and select ROM20.3 SHIP in the NV INIT menu by operating Left [←] or Right [→] arrow key.
2. Press CLOCK SET button of 'NT-1' Main Unit and press [NV INIT] key of TMⅢ again after 'NT-1' Main Unit is in clock set mode.
3. The LCD of 'NT-1' Main Unit blinks 4 times and carries out Auto-Power-Off after it is in counter mode. (Data are written in NVRAM.)
4. Press [NV VFY] key and verify the result of data. When verification was completed correctly, if different data was found, between ROM data inside jig and NVRAM of 'NT-1' Main Unit, even if only one, the jig buzzer sounds twice and displays the address and the data on the LCD panel.

SECTION 8
TRACE MONITOR Ⅲ MANUAL

1. OUTLINE

1-1. Introduction

This instruction manual explains the "TRACE MONITORⅢ (TMⅢ)", a service jig for digital micro recorder 'NT-1'.

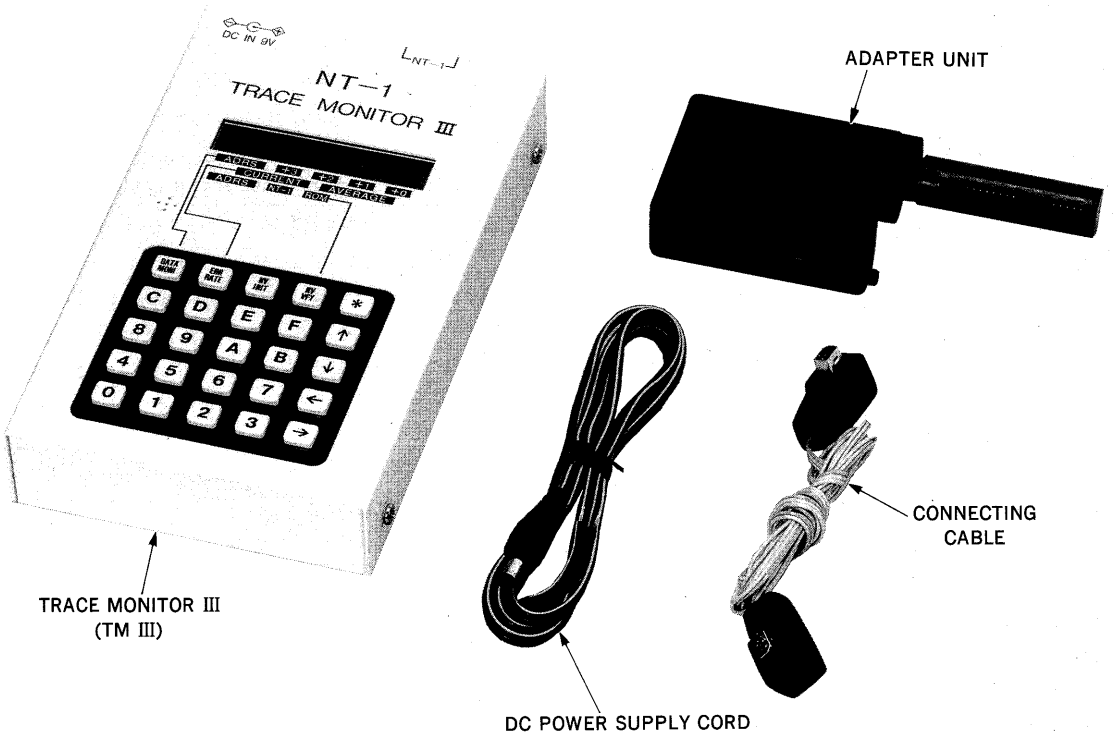
1-2. Functions

TRACE MONITORⅢ provides the following functions.

1. Data monitor function
   to display RAM data of 'NT-1' Main Unit CPU (CENTRAL PROCESSING UNIT) and to rewrite this data (2 addresses, each giving 4 consecutive data blocks).
2. Error Rate measuring function
   to display the error rate of 'NT-1' in playback every 1.25sec and the averaged error rate of 20consecutive measurements.
3. Initializing & Verifying function
   for NVRAM (nonvolatile RAM) inside the 'NT-1' Main Unit (You can specify all the addresses or a part of them by selecting them in ROM data inside the jig.)

2. SPECIFICATIONS

✱CPU	HD64180Z (8MHz)
✱Built-in Memory	ROM 64K bytes
	RAM 32K + 8K bytes
✱Indication	Liquid Crystal Character Display Module (16 characters × 2 rows)
✱Operation Key	numerical key of 0 to 9, alphabetical key of A to F, cursor (arrow) key, asterisk (✱) key, function key
✱Input	Connector for 'NT-1' (Made by MITSUMI CO., P19-07-0072SA)
✱Power Supply	DC 9V Input (applicable : EIAJ RC-5320)
	Current Consumption : approx. 200mA



3. OPERATION PROCEDURE

3-1. Power Supply

—Power supply is DC 9V input in TMⅢ. Please use an AC adapter taking notice of the polarity of plug. When you use an electric power unit, connect the white line-side of the accessory cable to '+' side.

—TMⅢ has no power switch. Therefore, this jig functionates as soon as you have connected the electric power unit.

—Do not forget to apply power to the NT-1 set (1.5V supplied through the NTU-2 adapter unit).

3-2. Connecting with 'NT-1'

Connect TMⅢ to the adapter unit through the exclusive cable (7P connector cable to be inserted in top side of TMⅢ) and insert the adapter unit into 'NT-1' battery case. When 'NT-1' Main Unit powers off, TMⅢ displays 《OFF LINE》on the LCD (LIQUID CRYSTAL DISPLAY) panel. (This remark does not apply to the NV INIT/VFY mode.) When you turn on the power of 'NT-1' Main Unit, press its clock set button for a second or more, and make sure that calendar is blinking on the LCD panel.

3-3. Data Monitor

If you press [DATA MONI] key, this jig enters data monitor mode.

[DISPLAY OF DATA MONITOR MODE]

FF80 :	XX	XX	XX	XX
FF80 :	XX	XX	XX	XX
[ADRS]	[+3]	[+2]	[+1]	[+0]

In this mode, TMⅢ displays RAM data of the 'NT-1' Main Unit CPU. You can rewrite the RAM data by operating the keyboard. All the indications are hexadecimal digits on LCD of TMⅢ. TMⅢ displays the address of 'NT-1' Main Unit Memory which you are referring to on ADRS column, and the data of ADRS + 3, ADRS + 2, ADRS + 1, ADRS respectively on the column of + 3, + 2, + 1, + 0 .

You can move the cursor by pressing Right ([→]) or Left ([←])arrow key.

When the cursor position on the ADRS column, you can rewrite the referring address of 'NT-1' Main Unit Memory by operating numerical & alphabetical key (0 to 9, A to F) or Up arrow key ([↑], increment) & Down arrow key ([↓], decrement).

When the cursor position is on the data column, you can rewrite RAM data of 'NT-1' Main Unit directly.

Your input data is transferred as soon as you have pressed numerical & alphabetical key or Up & Down arrow key.

When you rewrite, please pay attention to the address you are rewriting.

Also, when you want to alter the contents of NVRAM permanently, activate (turn on the power of) NVFLG by pressing [✱] +[0] key, and carry out Auto-Power-Off.

3-4. Special Function in Data Monitor Mode

By pressing Asterisk [✱] key + any key of [0] to [F] in data monitor mode, special functions are active.

[DISPLAY OF SPECIAL FUNCTION]

FF80 :	XX	XX	XX	XX
Push key 0~F				

If you press [✱] key in data monitor mode, the display shows the above menu. Then, you can conduct the following functions by pressing any key of [0] to [F]. But, if you press any other key, the special function mode is cancelled, and the display changes to normal data monitor.

[0] key·····Activate (turn on the power of) NVFLG. 〔Rewrite NVRAM backup flag (address : FE9FH) of 'NT-1' Main Unit Memory to "FFH". If this flag is specified as "FFH", 'NT-1' backs up RAM data to NVRAM when you carry out Auto-Power-Off.〕

[1] key·····Enables all segment of LCD on 'NT-1' Main Unit (all segments on)

[2] key·····Disables all segment of LCD on 'NT-1' Main Unit (all segments off)

[3] key·····Enables LCD on 'NT-1' Main Unit (normal display)

[4] to [F] key·····not used

3-5. Measurement of Error Rate

If you press [ERR RATE] key, TM Ⅲ enters error rate measuring mode.
This jig measures and displays error rate in playback of 'NT-1' Main Unit.

[ERR RATE DISPLAY]

A : XX. XX% XX. XX%	upper row : error rate of A head
B : XX. XX% XX. XX%	lower row : error rate of B head

[CURRENT] [AVERAGE]

This jig displays an error rate every 1.25sec on CURRENT column, and the averaged error rate for 20times-measurements on AVERAGE column.
Averaged error rate is calculated only once after you pressed [ERR RATE] key.
While calculating, the display shows "**.**" marks on AVERAGE column.
If you want to get averaged error rate again, press [ERR RATE] key once more.

Immediately after you pushed play on the 'NT-1' Main Unit, the error rate is not measured accurately.
If you want to get accurate error rate, you should press [ERR RATE] key to start the measurement after you started play on the 'NT-1' Main Unit. The display is in percent, if for example the error rate should read 00.10%, this means 1/ 1000.

3-6. Initializing of NVRAM

When you want to initialize the NVRAM data of 'NT-1' Main Unit partly or totally, this mode is available.
When TM Ⅲ enters this mode by pressing [NV INIT] key, it displays the menu for selecting initializing data.

[NV INIT MENU FOR SELECTING INITIALIZING DATA]

Sel : ← → Go : NVINIT ROM 20.3 INIT	← Label of initializing data

In this menu, press Right [→] and Left [←] arrow key to select initializing data. These data has been written in ROM inside the jig. A maximum of 16 initializing data patterns can be stored in the ROM.
At present, the following two data patterns have been written in ROM.

Label	Contains
"ROM20.3 INIT"	Initialize all the data of NVRAM. To be used when you exchanged the NVRAM.
"ROM20.3 SHIP"	NVRAM setting data for shipment. To be used only if the initialization is required in ex-factory status. (Volume Level, tape counter, etc.)

If you press [NV INIT] key once more after you selected initializing data, this jig starts initializing. Unless 'NT-1' Main Unit is in "STOP" mode, this jig doesn't start initializing.
Normally, turn on the power of 'NT-1' Main Unit by pressing its [CLOCK SET] button, and then, conduct initializing operation.
While initializing, LCD of 'NT-1' Main Unit blinks 4 times (ON−OFF).
When the initialization is completed normally, LCD on 'NT-1' Main Unit displays the normal count and powers off.
LCD on TM Ⅲ displays the menu for selecting initializing data.

3-7. Verifying of NVRAM

This mode is available to compare "NVRAM data of 'NT-1' Main Unit" with "initializing data of ROM inside the jig".
And also, it's available to make sure that initializing of NVRAM or setting for shipment was completed normally.
Similar to the mode for initializing NVRAM (Item 3-6), when TM Ⅲ enters this mode by pressing [NV VFY] key, it displays the menu for selecting verifying data.

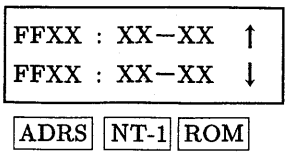
[NV VFY MENU FOR SELECTING VERIFYING DATA]

Sel : ← → Go : NVINIT ROM 20.3 INIT	← Label of verifying data

The contents of data and selecting operation is the same as details mentioned in "Initializing of NVRAM" (Item 3-6).
After selecting, turn on the power of 'NT-1' Main Unit by pressing its [CLOCK SET] button and press [NV VFY] key to start verifying.
When verification is completed, if different data was found between ROM data inside jig and NVRAM data of 'NT-1' Main Unit, even if it is only one, the jigs buzzer sounds twice and displays the address and the data on the LCD

panel.

[NV VFY DISPLAY FOR INDICATING NG DATA]



[ADRS] the address which the result of verifying is NG
[NT-1] Data of 'NT-1' in NG address
[ROM] ROM data inside jig in NG address

Besides, if there are two or more different data blocks, you can scroll the address and the data on LCD panel by operating Up ([↑]) or Down ([↓]) arrow key.
So, you can refer to all the address and all the data.
Also in this mode, when verifying was completed, LCD on 'NT-1' Main Unit powers off.

English
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